

THE SCREEN ORGAN IN YORK MINSTER,
(1861-1902).

BUILT BY MESSRS. W. HILL & SONS.

This illustration shows the Fan Tubas as seen from the Nave.

(Reproduced by kind permission of the Very Rev. the Dean of York).

TO
T. TERTIUS NOBLE,
ORGANIST AND MASTER OF THE CHORISTERS, YORK MINSTER,
THIS VOLUME IS GRATEFULLY DEDICATED

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CARNEGIE INSTITUTE OF TECHNOLOGY,
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PITTSBURGH, PA.

DICTIONARY OF ORGAN STOPS

English and Foreign, Ancient and Modern:

PRACTICAL, THEORETICAL, HISTORICAL, AESTHETIC,
ETYMOLOGICAL, PHONETIC,

BY

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WITH A
FOREWORD

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"In the whole carriage of this work, I have assumed unto myself the freedom of a just historian; concealing nothing out of fear, nor speaking anything for favour; delivering nothing for a truth without good authority; but so delivering, that truth, as to witness for me, that I am neither biassed by love or hatred, nor overswayed by partiality and corrupt affections."

"ECCLESIA RESTAURATA," by PETER HEYLYN, D.D., London, 1661.

FOREWORD.

A WORK of this kind will hardly need any apology, for its utility is sufficiently obvious to commend it to all earnest students of the organ. There seems to be nothing in existence quite like it, although it must often have happened that young players, confronted by some unfamiliar system of stop-nomenclature, have felt the need of a manual such as this. The art of organ building has made enormous strides during the past thirty years, and various builders have added vastly to the resources of the instrument, both as regards tone and mechanism. In the meantime some stop-names have fallen into comparative disuse, while many more have been devised, and have met with partial acceptance. Although various attempts have been made from time to time to evolve an universal system of nomenclature, we are, at present, in a somewhat chaotic state, for even in our own country we are continually confronted by the difficulties which of necessity arise through stops of a similar character being called by more than one name, or (and this is more puzzling still) stops of varying effect being designated by the same term.

It is the function of this manual to make provision for this unsatisfactory state of affairs, rather than to attempt to remedy it. From a long personal friendship with the author, combined with a careful study of his writings on organ matters in the musical press for a number of years, I feel that I shall be voicing the opinion of many others if I say that there is no one more highly qualified to undertake a work of this kind than he. That part of the book dealing with stop-names at present in vogue in England, is the outcome of many years study, combined with a practical acquaintance-ship with every important organ in the country. The section treating of Continental nomenclature has been tested by the author in the course of his travels in France, Germany, Norway, Holland, Belgium and Switzerland, and is, moreover, largely corroborated by one of the greatest of French experts, while the inclusion of the names and descriptions of obsolete stops will be of special value to those students of old specifications who may desire to realize what the organs of the past were really like.

FRANCIS BURGESS.

PREFACE.

IN projecting this work two courses appeared to me to be open to adoption. The first, entailing the rigid suppression of all personal opinion, at once commended itself as the orthodox and preferable method of compiling a Dictionary. But having tentatively composed a few sheets within the severe confines of this scheme, it soon became evident that not only would such a mere collection of formidably and monotonously technical details be entirely unacceptable to organists in general, but that, also, unless some means were adopted of criticising the diverse modes of treating various stops, the book would be hopelessly indefinite in the nature of its information.

I have therefore selected the second course, and been so far emboldened as to include in the work expressions of personal opinion, and the results of my own heuristic observation. It is, of course, distinctly to be understood that these personal opinions are in no sense put forward as *ex cathedra* pronouncements, or as mere dogmatic assertions to be swallowed, so to speak, as a pill.

Entirely unconnected as I am with the organ building profession, and having acquainted myself with the work of all the foremost English builders, I have felt entirely at liberty to enlarge the description of various stops, and, thereby, in no small measure to augment the general utility of this work, by unusually copious references to organs in which they find a place. That some names occur more frequently in this connection than others is due, mainly, to the fact that they are those of builders, the particular characteristics and the general modernity and artistic merit of whose work have justly demanded especial notice or comment. It is not possible to be altogether impersonal in a work of this character. But I have not been unmindful of the fact that the possible success of this work must, in no small measure, be dependent upon the degree of impartiality instilled into it.

Having adjusted these matters of polity, it remains to review the general scheme of the work. In the first place, every effort has been made to deal fully and practically with modern stops. In occupying oneself so much with details, one is, perhaps, at times, apt to lose sight of principles. I have, nevertheless, attempted, out of the chaotic state to which the modern discoveries seem to have reduced organ tone, to

frame a few constructive principles of tonal design, and at any rate to indicate the trend of modern thought. There is but scant merit in destructive criticism, save in so far as it opens the path to a more perfect and complete apprehension of fundamental truth. These matters, however, are discussed more specifically—and in a somewhat more *dégage* style than is here fitting—in a brief and informal brochure issued by the present writer about a year and a half ago, and entitled “Tonal Design in Modern Organ Building.”

In the present book, also, is included for the first time a detailed description of the many tonal inventions of Mr. Hope-Jones, some of which have largely influenced modern organ building. It is in the hope that organists and organ builders will cease to regard these latter as a mere *abracadabra* with which to conjure, and will grasp their inner significance, that they are here described with such detail. My own attitude towards Mr. Hope-Jones’ work is defined elsewhere—in a footnote to p. 104. And here I would take the opportunity of protesting against the habit, which just now seems fashionable, of endeavouring to disparage his organs in every possible manner. The Worcester Cathedral organ was recently described to me as the most noisy machine in the county, by a man, who, as I afterwards discovered, had been among the first to describe it in a published testimonial, as magnificent. This organ, which suffers from being badly placed, and from being a pioneer instrument, certainly has a tremendous reserve of power, but it does not therefore follow that this reserve is constantly to be drawn upon. No single instrument, I suppose, has of recent years, more influenced the standard and character of voicing throughout the country than this one. The Hope-Jones organ, in fine, is based on tonal lines vastly differing from the conventional, and if the stops be handled like those of any ordinary instrument, can it be expected that the result will be otherwise than incongruous? Certainly in accustomed hands, these instruments are productive of the most splendid effects, considering their size. It is not conceivable that any man can form a fair estimate, either good or bad, of a new system of organ building from, may be, a scratch half-hour’s playing on one single instrument. I plead for a little more knowledge, and a little less of this shallow and perfunctory opinionizing, which cannot be dignified by the title of criticism. Having inspected in all some twenty instruments built on the Hope-Jones tonal system, I am able to vouch for the general accuracy of such descriptions. And the same policy has been adopted in the case of other novel stops of value.

Some surprise may possibly be felt, that, contrary to the accustomed precedent, I have not reiterated the staple stock-in-trade arguments levelled against *Célestes*, *Tremulants*, and *Vox Humanas*. The reason, a simple one, is, that I am honest enough to confess (be it a matter for confession

at all) that, when used with due moderation, I find nothing objectionable in such effects.

Nor do I hold it at all essential to the well-being of the organ, to declaim against the so-called overgrown modern Swell organ, alleged orchestral imitation, and the supposed deterioration of modern organ tone. A cursory glance through organ literature, reveals the astonishing fact, that for upwards of a century, organ tone has been affirmed to be in a rapid decline. Maybe the edict will soon go forth that the Pan's Pipes or Theophilus' primitive metal pipes are, after all, the *beau idéal* of organ tone. Though it is, unfortunately, the case that, in the ordinary run of circumstances, one seldom meets with a church organ in all respects even tolerable to a cultured ear, yet it is surely the work of the most eminent modern artists which constitutes the standard in relation to which such judgment is framed. Again, let such stops, ancient and modern, as can be appraised on a common basis be compared, let the work of Father Smith be contrasted with that of Father Willis, and I venture to assert that the "deterioration" bogey will take refuge in precipitous flight. The homage of the antiquary, however much one may sympathize with it, must not be permitted to obscure the faculty of sound judgment. It is possible to exaggerate reverence for old work until it degenerates into a tyrannical disparagement of the new.

It is, perhaps, peculiarly the fact that musicians, and especially organists, lack very much in the broad catholic spirit. Perchance it is for very jealousy of the sanctity of their Art. But no sooner does an organist express his admiration for the solid German school of organ music than he forthwith proceeds to inveigh against the levity of the French school. The diatonic spirit of Bach's works but serves to him as an incentive to tirade against the chromaticism of Spohr. Yet abolish chromaticism, and you sacrifice that, which—apart from its own intrinsic value—by very force of contrast conspires to enhance the dignity of the diatonic style. Even so, by reason of the frailty of man, may the "fancy" effects of the organ serve the more to display the breadth and sonority of the unimitative stops, as the setting may heighten the lustre of the jewel. Speaking with all due deference, it is surely not merely unwise, but also unjust, to ignore the claims to recognition of the vast school of French organ-playing.

So far as has been practicable, scales of average measure have been appended to the descriptions of important stops. They are mainly intended for the information of amateurs. It has never appeared to the writer desirable or seemly to attempt to teach the organ builder his own profession, nor can he too definitely point out to those responsible for the compilation of specifications the utter absurdity of the seemingly not uncommon scolastic practice of copying out from some such work as this certain scales, and of then enjoining their use on the organ builder. Apart

from the facts that a good builder* may safely be trusted to know his business, and that different builders are at their best when dealing severally with different scales, it is not for one moment to be supposed that the scales given in this volume are all of a standard equally adapted for incorporation in any one organ. Provided he is sufficiently well informed, an organist is undoubtedly within his rights in "designing" an organ—to the extent that with him rests the decision whether the Great organ is to contain a Hohlflöte or a Waldflöte or a Tibia, a Trumpet or a soft Tuba, the Swell a Cornopean or an Oboe, and so forth—but the dictatorial imposition of arbitrary scaling is entirely outside his lawful province. The more carefully these distinctions are recognized, the more ready will organ builders be to listen to any suggestions. In the case of the various stops of novel structure included in this book, the matter rests on a somewhat different basis. Here such particulars are given as may well serve as a general guide. And under Diapason I have commented on what, I am convinced, is a distinct abuse of Scaling.

In these days of progress, such books as this are necessarily of but fleeting and short-lived technical value. One invention presses hot upon the footsteps of its predecessor, with the result that in the space of a few years, the whole aspect of any technical science undergoes transformation. Even while this book was passing through the press, it was necessary to insert descriptions of various new stops, in order to ensure the work being absolutely up-to-date. For this reason I have striven to render the present book of some historical interest. In this connection, there is one point only requiring explanation, and that is, that in the cases of obsolete or obsolescent stops, the recorded instances of their employment have not necessarily reference to organs still extant, though, of course, where possible, existing instruments have been drawn upon.

It was felt that in many cases some explanation of the origin and meaning of the various stop names, would be a source of interest to readers. In the prosecution of this task, free use has been made of a "Dictionary of Etymology" by the author's grandfather, the late Mr. Hensleigh Wedgwood, M.A., sometime Fellow of Christ College, Cambridge. The fact that this Dictionary is based almost exclusively on the theory (then regarded as quite exceptional, and affirmed by him in opposition to the contentions of Professor Max Müller), that the formation of words is mainly to be attributed to a process of onomatopœia, that the radical basis of articulate sound is mainly imitative of natural sound—

* Of course, the numerous "jerry-builders"—obscure or notorious—are entitled to no consideration. They rank trade before art, commercialism before emulation. No sane person will ever consent to have dealings with them. The present abominable system of competition by tender, rather than selection according to merit, has much to answer for.

will at once betoken the peculiar pertinency of its use in connection with the largely sonant origin of organ stop terminology. It is scarcely necessary to observe that the stop nomenclature of the middle ages draws very largely upon what is commonly designated "dog-Latin."

At the close of the book is appended a brief Phonetic Pronouncing Vocabulary of Organ Stops for the convenience of students.

Though I have endeavoured to systematize the work as uniformly as possible, absolute consistency of treatment would in some cases have involved repetitions or extensions calculated to enlarge the work to a degree entirely incommensurate with the ensuing advantage.

It was my original purpose to have prefaced this book with certain *prolegomena* treating of the tonal development of the organ and the *rationale* of "voicing," but the idea was discarded upon my finding that these subjects could best be dealt with, to the avoidance of vain repetition, in the body of the work.

It will, perhaps, be well to point out to American and Continental subscribers that the references to organ building in their countries are intended solely for the information of English organists, and do not pretend to be exhaustive.

As regards the general literary style, the difficulty of presenting matter of so technical a description in a readable garb will be apparent to all. Anglo-Saxon purists, who resent the over-free introduction into the English tongue of words of French origin, must perforce admit that in a work like this one, dealing from cover to cover with one subject, constant use of such terms is from the very exigency of the case unavoidable.

One cannot be sanguine enough to hope that so lengthy and so technical a treatise can have escaped error. I can only say that I shall at all times be grateful to any of my readers for corrections, or suggested improvements, for embodiment in a second edition, should such, perchance, ever be in request.

In conclusion, it is a pleasant duty to tender my thanks to the subscribers to this work, whose names are printed at the end thereof. I have also to acknowledge my indebtedness for much valuable information to friends too numerous to mention individually. The name of Dr. Gabriel Bédart, *Professeur agrégé de Physiologie* at the University of Lille, demands, however, special mention as that of a learned and practical organ expert, who has contributed many interesting items of French organ building. And last, but not least, my friend Mr. Francis Burgess, who in addition to the lucid "Foreword" is responsible for many useful suggestions, commands my heartfelt thanks for having, amidst the stress of an unusually industrious life, freely granted me his most assiduous and invaluable aid in the rather formidable task of revising the proof sheets.

YORK, October, 1905.

J. I. W.

PREFACE TO THE SECOND EDITION.

THE remarkably cordial reception of this work at the hands of the Press and of the organ-loving public generally, has altogether surpassed my anticipation. It has, in truth, revealed the existence of a large and ever increasing body of organists who are taking an active and intelligent interest in the tonal development of their instrument. Such a state of affairs assuredly augurs well for future progress.

In preparing this second edition for the press, I meet a wish expressed that I should gather up in a few words the threads of the several tonal evolutionary tendencies manifested during the past century. References to tonal achievements illustrative of the general trend of my remarks are prominent in the text of this book; I accordingly leave them largely out of present consideration.

We move in an age marked by much clash and transience of opinion as to what constitute the foundation principles of organ building. Small matter this warring of beliefs: for when was there brought to birth a Wonder-child without the preceding travail and anguish? But if in scrying beyond the ephemeralities of the moment one fact emerges clearly, it is that the modern organ has come to stay, having won all but universal acceptance. We have rounded the nadir point of the period of reaction which inevitably succeeds the introduction of any new product of human ingenuity. The modern organ no longer has need of any *Apologia*, it has vindicated its claim to be regarded as a step forward in progress.

If we review in broad outline the history of the organ during the past century—"the wonderful century," as the venerable Dr. Alfred Russel Wallace has characterized it—we shall find that the tonal progress achieved may be relegated to three distinct streams of influence. Two of these had their source on the Continent, the third represented the adaptation to organ building of those scientific methods which gradually permeated all departments of industrial life during the latter half of the century. Dr. John Camidge, of York, and William Hill were responsible for the first influx of new ideas. From the various foreign musicians who frequented the colossal pioneer Musical Festivals in York Minster—abiding witness to the value of such institutions—Dr. Camidge learnt of the magnificence of

the classical examples of Continental organ building; and in William Hill he found a man of progressive ideas, who blended the newer methods with the best traditions of English organ building. Thus, so far as English organ building was concerned, were laid the foundations of the new science of tonal design. For the first time, broadly speaking, the English organ took shape: scientific design, albeit of a rudimentary character, replaced chaotic empiricism. One has only to contrast the average English organ of that period with the Continental instruments with their C compass, adequate pedal organ, subunisonal foundation and well built up chorus and mutation work, and then turn to the outcome of Camidge's and Hill's joint labour in the shape of the York and Birmingham Town Hall organs, to perceive the great significance of this epoch in the annals of English organ building.

The next step was heralded by the Exhibition of 1851, promoted by the Prince Consort, at which English builders gained the opportunity of studying representative French and German organs at first hand. Henry Willis, the brothers Bryceson, and others, introduced much that was valuable of French methods. In some few respects, on the contrary—particularly as regards the practice of slotting and the gradual disuse of wood manual pipes—the *entente cordiale* with the builders across the Channel proved a veritable *fons et origo mali*, from the dire effects of which we have but recently reached the convalescent stage. Fully compensating for this, however, came the introduction of string voicing, harmonic flue and reed voicing, and the French system of reed voicing on the basis of which Willis reared and developed his own unrivalled work—though the subsequent development of this system belongs more properly to our third epoch of progress. Edmund Schulze's Exhibition organ attracted so much attention that he secured a commission for the large Doncaster organ, and thereafter for several other instruments. His work influenced English voicing very considerably, and although from our present day point of view seriously imperfect in many respects, both of detail and design, it nevertheless remains a monument to his genius and to the perfection of the German style, exceptionally noteworthy for its period.

The third great stream of progress is associated primarily, I consider, with the names of Henry Willis and Robert Hope-Jones. The well-known “word of reproach,” that a prophet is not without honour save in his own country, is true of prophetic epochs equally as of prophetic personalities. Alive as I am to the tendency of the fascination of the hour to glamour one into investing contemporary events with undue importance, I shall not seem extravagant, perhaps, when I suggest that conceivably this third epoch will rank in the judgment of posterity as considerably the most important of the three, as the epoch fraught with the most decisive issues so far as the subsequent development of the organ is concerned. Its main

characteristic is, as I have already indicated, the direct application of scientific methods to organ building, and, with that, the shaping of the organ to express the more adequately the musical requirements of the age. The point is so constantly elaborated in the body of this book that I am relieved of all necessity of emphasizing it here. Suffice to say that perhaps the main fruit of this tonal harvest has been the development of the sustaining foundational power of the instrument, the infusion of far greater variety and wealth of tone-colour, and the consequent better adaptation of the organ to take what is called a "free part" in the "accompaniment" of vocal music.

The study of history subserves a purpose far more important than that of ministering merely to our retrospective propensities, and our interest in bygone times. It enables us to peer beyond the things of the moment, and to apply the lessons of the past to the problems of the present, to look forward into the more immediate future. Even a superficial study of the tonal and mechanical evolution of the organ reveals how curiously short-sighted has been much of its treatment in the past—witness the exaggerated cult of Mixture work, due to mechanical limitations of the wind-distributing machinery of the organ. The tendencies of the past century present to us a fascinating study, the importance of which, as affecting the future of the organ, it would be difficult indeed to over-estimate. Signs are not lacking that we have amongst us those who are devoting to present-day problems the same love and care which has characterized the pioneer workers of the century past. That their labours may be as richly rewarded will be the earnest hope of all true lovers of the organ.

Save for a few necessary textual alterations, this edition of the "Dictionary of Organ Stops" corresponds fairly closely with the original edition.

J. I. W.

2, KELFIELD GARDENS,
NORTH KENSINGTON, W.

August, 1907.

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1833 he went to Paris, but innocent of any intention of remaining there. Whilst at Paris he heard of a competition for the building of an organ for the important Abbey Church of St. Denis. Although but two days of the appointed lease of time yet remained, he succeeded in lodging his tender. So interesting were the novelties, such as harmonic pipes, divided wind pressure, etc., introduced into his scheme, that he was selected to build the organ. This instrument, the success of which was largely due to his perspicacity in adopting Barker's pneumatic lever, formed the foundation on which he reared a wide-spread reputation. Cavaillé-Coll died in 1899. The name Coll, which he affixed to his surname, was that of his grandmother.

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TABLE OF HARMONIC SERIES.



The following are the tones generated by a vibrant string, or column of air confined in an open organ pipe :—

Harmonics or Overtones. { etc., etc.,

- 8. Twenty-second.
- 7. Flat Twenty-first.
- 6. Nineteenth or Larigot.
- 5. Seventeenth or Tierce.
- 4. Fifteenth.
- 3. Twelfth.
- 2. Octave.
- 1. Fundamental, or prime, tone.



The first of these harmonics, the octave, is known also as the second partial, or first *upper* partial.

A *stopped* organ pipe generates only the odd-numbered partials, viz., Fundamental, Twelfth, Seventeenth, Flat Twenty-first, etc. (But see footnote under BOURDON).

EXPLANATION OF MEASUREMENTS RELATIVE TO THE SCALING OF PIPES.

CCCC	= 32 ft. C.	T. C	= Tenor C.
CCC	= 16 ft. C.	Mid. C	= Middle C.
CC	= 8 ft. C.	Tr. C	= Treble C.

The width of the mouth of a flue pipe is measured according to the proportion it bears to the circumference of the body of the pipe. Thus a "mouth" extends round the pipe, the distance of one-fourth of its circumference.

The height to which the mouths are cut up may be expressed in two ways—by absolute measurement, and by relative measurement. The first method—e.g., cut up " $\frac{1}{2}$ in."—presents no difficulty. But when the mouth is said to be "cut up $\frac{1}{3}$," it is intended to signify that it is cut up to a distance corresponding with $\frac{1}{3}$ of the width of the mouth.

ABBREVIATIONS USED IN THIS WORK.

Eng.	= English.	Gr.	= Greek.	Sp.	= Spanish.
Fr.	= French.	It.	= Italian.	in.	= inches.
Ger.	= German.	Lat.	= Latin.	q.v.	= which see.

EXPLANATION OF TYPOGRAPHICAL SCHEME.

Three varieties of type have been employed for the stop-headings in this Dictionary

The large dark type indicates that the stops so designated are those most commonly occurring in representative English organs, and of primary importance to those studying for examinations, in the syllabus of which Organ Construction figures.

The light capitals denote stops of lesser importance, a knowledge of which the student would, nevertheless, do well to possess.

And the small type has reference to stops which are either obsolete or merely unimportant. Many of these are of interest from the antiquarian point of view.

DICTIONARY OF ORGAN STOPS.

A.

Acoustic Bass—Harmonic Bass; Resultant Bass; also Gravissima (*q.v.*); Gravitone (*q.v.*); Tonitru (*q.v.*); comprising also Acoustic Violone, and Quintatön, 32 ft. tone. 32 ft. tone, rarely 64 ft. tone.

Resultant Bass is a permissible synonym, but the use of the term "harmonic" is open to objection, owing to its well-nigh exclusive application in organ-building to a particular method of generating tone, as exemplified in the Harmonic Flute.

The phenomenon variously known as resultant, combinational, vibrational, acoustic and (in a limited sense) differential tones was discovered by Tartini, *circa* 1714, and, subsequently, independently by Sorge in 1740. It was first introduced into the organ by the Abt Vogler (1749–1814), as a feature of his "Simplification System." Acoustic Basses are indeed but sorry substitutes for real 32 ft. stops, and, contrary to the worthy Abbé's expectations, have not ousted them; nevertheless the Acoustic Bass forms an economical compromise available for instruments of no great pretensions.

A resultant tone is an acoustical illusion produced by the periodic coincidence of particular vibrations emanating from two or more pipes (or other tone generating agents). Such periodic synchronizations reinforce one another, and are therefore involuntarily isolated and synthesized by the ear. They thus appear as vibrations produced by some independent agent, the pitch of the illusory note being determined by the frequency with which the synchronous vibrations occur. This frequency is dependent upon the interval separating the pipes. If, for instance, the interval amount to a major third, the resultant tone will be heard at the pitch of two octaves below that of the lower of two pipes; if a fifth, at one octave. Thus a 16 ft. pipe and a Quint 10 $\frac{2}{3}$ ft. when simultaneously sounded, give rise to a resultant tone of 32 ft. pitch.

Let α represent the 16 ft. pipe, β the Quint pipe. Adopting the recognised *scientific* standard of pitch, in 1 second α will give rise to 32 vibrations, β to 48 vibrations. Reducing this to the simplest dimensions

(by division by 16), in $\frac{1}{16}$ second the number of vibrations of a will be 2, of b 3, ∴ the *ratio* of coincident vibrations = 2 : 3.

In other words, every second vibration of a will occur simultaneously with every third of b , and this synchronization will take place every $\frac{1}{16}$ of a second. Such coincident, and therefore accentuated vibrations, occur then at the rate of 16 per second, which is approximately the rate at which the column of air in a 32 ft. pipe vibrates. The association of a 16 ft. pipe and a Quint pipe will accordingly give rise to a resultant tone of 32 ft. pitch.

Resultant tones produced by instruments of sustained tone, such as the organ or harmonium, are more readily perceptible than those of percussive instruments like the piano. For in the latter class of instrument the tone commences to diminish in intensity almost immediately after percussion has taken place.

Attempts have been made to build up 32 ft. tone of greater power and distinctness than is usually obtained with 16 ft. and Quint pipes only, by a more extensive representation of the harmonic series. Walcker, of Ludwigsburg, appears to have been the first to make such an experiment, and the earliest instance the author is able to trace is at Ulm Münster (1856). Other examples by this firm occur at Boston Music Hall, U.S.A. (1857-63); Votivkirche, Vienna (1878). In all these instances the "Grand Bourdon" was composed of Principal, 16 ft.; Quint, $10\frac{2}{3}$ ft.; Octave 8 ft.; Tierce, $6\frac{2}{3}$ ft.; Super-octave, 4 ft. At Einsiedeln Monastery, Switzerland (Weigle, 1896-97), it extends only to Tierce. In this country, Mr. Casson has utilised Quint and Tierce, for an acoustic effect, in the organ till recently at Longwood House, Nayland. Prof. Carl Locher, in his work on organ stops, quotes Gottschalg as testifying to the excellent effect of the combination at Vienna. The author is personally able to speak for a similarly successful result at Ulm and Einsiedeln. Although the more complete representation of the harmonic series is undoubtedly conducive to superior results, the cost of the additional pipes renders it as much worth while to procure an independent 32 ft. stop, taking into consideration the greater utility and effectiveness of the latter register. A Sub-Bourdon, 32 ft. tone, is more serviceable when viewed from all aspects; though it will be found that an Acoustic Bass is considerably more telling in *forte* combinations than many instances of the former, particularly if the lower notes of the Sub-Bourdon exhibit a due proportion of ground tone.

In the normal Acoustic Bass, comprising two ranks of pipes, there are various methods of dealing with the Quint. It may be an independent set of pipes, or borrowed in quint pitch from a 16 ft. stop. In the latter case it may even be taken from the same stop as the 16 ft. rank employed—Sub-bass, for instance; indeed, this is the course generally adopted in organs of moderate size. When employed alone the effect is not altogether

artistic, because the Quint is as powerful as the prime note. Sometimes the latter is derived from the Violon or the Major Bass, and the Quint from the Sub-bass.

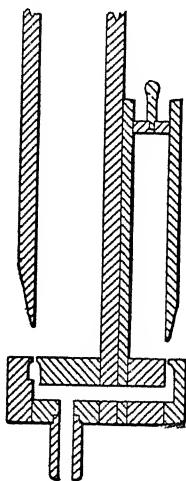
The objection is sometimes raised, however, that the independent Quint is alone productive of good results, as furnishing (unlike a stop merely borrowed in quint pitch) a pure, untempered fifth. True, an independent Quint is more effective, both for this reason and for the greater facilities offered in voicing it to suit the particular requirements imposed, but in moderate sized organs it is more costly than is really commensurate with the superiority of the effect obtained. Moreover, even granting that the independent Quint could be relied upon always to remain in perfect tune, the beats resulting from the tempered interval at the pitch in question are slow, and the fifth is practically "drawn" into tune by the prime note.

An independent Quint should be voiced as dull and as free from harmonics as practicable; it should be of fair scale, with thick lip, and preferably of stopped pipes. It should also occupy a position adjoining the 16 ft. stop, and, if possible, be situated against a reflecting surface—as, indeed, should all dull-toned pedal pipes.

It is now customary to restrict the acoustical effect to the lowest octave only, borrowing the Bourdon in octave position above that (*i.e.*, 16 ft. pipe on centre CC of the pedal-board). This plan, introduced by Mr. Casson, is adopted because in the upper range of the compass the acoustical effect is found in practical application to be unsatisfactory in effect. The difficulty is not confined to the tempered Quint, and cannot therefore be set down to the score of temperament. The explanation probably is, that as the pitch rises the harmonics of the pipes have to be reckoned with to a larger degree, and also that the resultant note approaches nearer to the more normal range of hearing. Thus, dealing with stopped pipes, the second upper partial (tierce) of C will sound——and the first (twelfth) of the Quint note G will sound— These two harmonics are quarrelsome neighbours. Of course, such dissonances are constantly occurring in notes harmonically associated in our musical system—indeed, they frequently impart a sense of piquancy to the combination—but that is only a corroboration of the contention that they exert on the ear a counter-influence which tends to detract from the power of impression of the resultant tone. The obvious remedy is to suppress the upper partials of pipes concerned in the production of resultant tones as much as is practicable.

It was on account of this obtrusiveness of harmonics that Mr. Casson adopted the use of the Quintatön (*q.v.*) 32 ft. tone. It is a stopped metal pipe, measuring perhaps, in the case of the 32 ft. pipe (16 ft. actual length), so little as 9 in. in diameter. A trace of 32 ft. tone is audible, but the

first harmonic (twelfth) combined with 16 ft. stops, builds up an excellent tone in which the harmonics occur in similar proportion to those of a Violone. Hence the alternative name Acoustic Violone. A similarly satisfactory result is obtained by allowing the twelfth of a stopped wood pipe of 32 ft. tone to remain fairly prominent (*e.g.*, St. Alban, Holborn, by Willis). (See under SUB-BOURDON).



Section of Roosevelt's Acoustic Double.

Roosevelt experimentally employed an acoustic effect for the lowest octave of some of his Great organ open Doubles. The true-length pipes extended to tenor C only, below which note the stop was continued by dull-toned 8 ft. wood pipes to which were attached a "monkey-Quint" (see HELPER). The Quint pipe was permanently affixed to the 8 ft. pipe, taking its wind from the same foot. The effect is said to have been most successful.

Schulze, at Bremen Cathedral, and the Kimball Co., at Washington Temple, U.S.A., inserted a Quint of $21\frac{1}{3}$ ft. pitch in order to produce an acoustical 64 ft. tone. Hope-Jones has accomplished a similar result at Worcester Cathedral (1896) and the Victoria Rooms, Clifton (1901), by coupling the 32 ft. stop in fifths for the lowest octave, and above that borrowing it in octave position (*i.e.*, 32 ft. pipe on centre CC key of pedal-board). The organs at the Colston Hall, Bristol (Norman & Beard), and Selby Abbey, Yorks (Compton), and the monster organ designed by Dr. G. A. Audsley for the Convention Hall, Kansas City, U.S.A., exhibited at the St. Louis Exposition (1904), are also provided with an acoustical 64 ft. stop. In a large organ the effect might, perhaps, be useful, not so much in the lower as in the upper range of the pedal-board.

Acuta—(Lat.) *Acutus* = sharp. A Mixture composed of high-pitched pipes. Sharp Mixture.

Adlerzug—(Ger.) *Adler* = eagle, *Zug* = pull.

A mechanical movement setting into motion the wings of a huge eagle suspended over the organ and flying towards an artificial sun. Garrison Church, Berlin (Joachim Wagner, 1723); Garrison Church, Potzdam (Joachim Wagner, 1725) (still preserved); Belgard, Hinterland of Pomerania (still preserved).

Æoline—Æolian; Æolodicon; Harp Æolian. 8 ft.; rarely 16 ft.; 4 ft.; 2 ft.

Derived from the Æolian Harp, named after Æolus, the mythical god of wind. The Æolian Harp consists of a sounding-board, across which

are stretched about a dozen catgut strings. When fastened in a window or other situation exposed to a current of air, the instrument emits mysterious and beautiful tones. Formerly, in Germany, a soft reed of 16 ft. or 8 ft. pitch, resembling in tone a soft Oboe. The pipes had bells on the top, and the tongues were thin and narrow. Merseburg Cathedral, Saxony (Ladegast, 1853). Sometimes equivalent to Clavacoline. Fulda (Ratzmann). Now in Germany, and invariably in this country, either a soft Echo Gamba, or a stringy Dulciana, with which the Céleste sometimes beats. Ulm Münster (Walcker, rebuilt 1889); St. John, Wilton Road, London (Lewis); Long Eaton Parish Church, Notts (Brindley & Foster). The last named firm usually employ a stopped wood bass for this register, sometimes grooving it to the Swell Gedackt. The CC pipe of an Æoline of average scale would measure about $3\frac{1}{2}$ in. in diameter.

Æqual—A term anciently employed in Germany to designate unison 8 ft. pitch. *e.g.*, Æqual-Gemshorn; Æqual-Principal.

Agges = Æqual.

Amoroso—(Lat.) *Amor* = love. = Flauto Amabile.

ANCHES—French equivalent to our “reeds.” *Anche d’orgue* = reed-stop of an organ. See JEU.

Angelica—See Vox ANGELICA.

Apfel Regal—See REGAL.

Armonica—(Sp.) = Harmonic.

Assat—A corruption of Nasat, sometimes occurring in ancient specifications.

Auslöser—Auslösung; Ausschaltung. (Ger.) Auslösen = to redeem, to free. Auschalten = to switch off.

A “negative touch” annulling the action of non-indicating pistons, and restoring that of the stop-knobs, or stop-keys.

Avicinium—Canary, Nightingale. Oiseau (Fr. = bird); Rossignol (Fr. = nightingale); Vogelgesang (Ger. = bird song); Vogelgeschrei (Ger. = bird cry); Merula (Lat. = blackbird).

A few odd pipes bent down into water and so caused to “emit a spluttering noise” (Hill, “Organ Cases”) or twitter in imitation of birds. A similar device is still employed in toy symphonies and by fowlers and bird tasters. St. Sulpice, Paris; Constance Cathedral; Carigrana Church, Genoa; Magdeburg Cathedral; St. Catherine, Magdeburg. At the Monastic Church, Weingarten, near Ravensburg (Gabler, 1750), the author found still extant both Cuckoo and Nightingale. The Rev. G. H. Palmer once informed him that there was (and perhaps is still) a stop labelled “Canary” on each manual of the organ in the cathedral at the Canary Islands!

B.

Bajete—(Sp.) = Bassette.

A 4 ft. pedal flue stop (at Seville Cathedral).

Bajo—(Sp.) = Bass.

BAJONCILLO (Baxoncillo) — (Sp.) = Bassoon. 16 ft.; 8 ft.; rarely 4 ft.

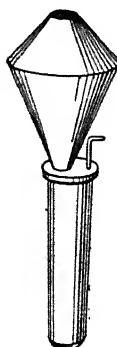
"The stop is known to be equivalent to Open Diapason" (Hamilton's "Catechism of the Organ"). However this may have been, the Spanish equivalent of Diapason, at the present day, is Flautado Principal, and Bajoncillo, or Baxoncillo, is restricted to Bassoon. Seville Cathedral. (Aquilino Amézua, 1903).

BAR—See BEARD.

Barduen—A corruption of Bourdon.

Barem—16 ft.; 8 ft. A quiet-toned Gedackt (= Musicirgedackt). Sometimes equivalent to Bärpfeife. Stadtorgel, Jena, 8 ft.; Hoforgel, Eisenbach, 16 ft.

Bärpfeife—(Dutch) Baar-pyp. (Ger.) Bär = bear. Pfeife = pipe. 16 ft.; 8 ft.



A reed stop of smothered growling tone, introduced into the organ in the XVIIth Century, in imitation of the growl of the bear. The pipes were made in various forms, but always with the object of smothering the tone. The pattern which seems to have been most used is shown in the figure. Sometimes, however, it was further surmounted by other cylindrical and conical tubes. It was also occasionally made as a cylindrical covered pipe with a small chimney rising from the lid. Commenting on the lack of appropriateness of some of the ancient registers, Schlimbach remarks that perhaps the growling of the bear was as propitious to the Deity as the Vox Angelica. Werkmeister records that the Bärpfeife was sometimes dubbed Vox Humana—truly a questionable enough compliment to the human voice.

Hamburg—St. Nicholas, St. Jacobi, St. Catherine, St. Peter, St. Thomas and Cathedral; Lubeck—Marienkirche (former organ, 1518) and St. Peter; Luneberg—St. Johannis and St. Lambert.

BARYPHON—(Gr.) *βαρύς* = heavy. *φωνή* = voice. 16 ft.

A free reed stop with Trumpet bodies, used occasionally in Swiss organs and frequently in Orchestrions (e.g., by Welte, of Freiburg, in Saxony).

BARYTON — (Sp.) Varitono. (Gr.) *βαρύς* = heavy. *τόνος* = tone.
16 ft.; 8 ft.

A reed stop of metallic tone, somewhat akin to the Cor Anglais. Very rare. Albert Hall, London (Willis, 1871); Seville Cathedral (reconstructed with electric action by Aquilino Amézua, 1903). The instrument of the name (obsolete) possessed six or seven catgut strings played with a bow. Under the fingerboard were metal strings, varying in number from nine to twenty-four, pinched with the thumb of the left hand, and serving as sympathetic resonators. It was known also as Viola di Bardone or Bordone (*cf.* Bourdon). Leopold Mozart, in his "Violin School," contends that the tone of the sympathetic strings was suggestive of the hum of bees. (See Grove's "Dictionary of Music and Musicians").

Bass Flute—8 ft.

The name is altogether illogical since (1) the orchestral Flute extends to fiddle G only, (2) the Pedal organ Flute forming a bass to the manual is of 16 ft. pitch. Flute 8 ft.—plain and simple—would be free from objection. The pipes of this stop are sometimes open, and, when indeed such pipes can be afforded, preferably so. But generally the pedal Flute is economically derived by extension and transmission from the Sub-bass 16 ft. Pedal organ octave stops serve to impart definition and firmness to the 16 ft. tone. They would, nevertheless, seem quite unnecessary in very small organs, the amount of money they cost, even though small, being open to more effective use in other directions.

Bass Horn—8 ft.

A Pedal organ reed, now obsolete. It was similar in construction and tone to the manual Horn. The orchestral instrument was of the Bugle family.

Bassanelli—Werkmeister states that these were reeds. They were obsolete even in his time.

Basset Horn—Corno Basso. (Low Lat.) Bassus = low. 8 ft.

A stop unknown in this country and but rarely found abroad. It is a free reed stop with short wide tongues, and the tone is generally sweet and soft. The Basset Horn is either entirely unprovided with tubes, or possessed of tubes of inverted conical shape, increasing rapidly in diameter. Riga Cathedral (Walcker, 1883); Ulm Münster (Walcker, 1856). At Ulm the stop possesses no tubes. The orchestral instrument is a tenor Clarinet. The Corno di Bassetto, as an organ stop, is a full-toned Clarinet (*q.v.*).

Basso Profundo—(Lat.) Profundus = deep. 16 ft.

A deep-toned pedal stop equivalent to Major Bass. Milan Cathedral, 24 ft.



Bassoon—*Fagotto*. (Fr.) *Basson*; (Ger.) *Faggot*; (Dutch) *Bazuin*. *Fagott* is derived from (Lat.) *Fagus* = beech tree. The orchestral instrument is said to bear this name from its resemblance, when in pieces, to a bundle of faggots. What is probably a more credible theory is, that it received the name owing to the employment of a beech tongue (It.) *Bassone* is an augmentation of *basso*—an instrument of a very low note. 16 ft.; 8 ft.; abroad (rarely) 4 ft.

The stop is not found in this country of 8 ft. pitch, except sometimes as a bass to the Oboe, Cor Anglais or Clarinet. The name *Fagotto* is usually reserved for a non-imitative reed of subdued tone. Thus *Contra Fagotto* is generally a quiet Double Trumpet of slightly rasping tone, rather than a Bassoon, and often has pipes open at the top. The 16 ft. octave is very frequently formed of half-length pipes. The pipes of the Bassoon are of metal (abroad very occasionally of wood) of inverted conical shape. The scale is small, and the tongues are narrow. The pipes are sometimes capped at the top. The tone is slightly nasal, and somewhat hollow and piquant. In Germany the Bassoon is often a free reed, and sometimes even possesses cylindrical bodies. The *Contra Fagotto* forms an excellent soft double reed for the Swell; the Bassoon combines effectively with Solo Harmonic Flutes. The orchestral instrument, owing to its conical bore, produces both the odd- and even-numbered partials. Speaking of the Bassoon, the author enjoys the acquaintance of a sexton, a very worthy and estimable man, who is wont to launch out into panegyrics over the tone of “them beautiful Basuto pipes in t' ould argin.” The average Bassoon scale varies from $2\frac{1}{2}$ in. to 3 in., CC 8 ft., and from 4 in. to 5 in. for the 16 ft. pipe.

Bauerflöte—*Pauerflöte*, *Tibia Rurestris* (Lat. = rustic pipe). (Ger.) *Bauer* = peasant. 8 ft.; 4 ft.; 2 ft.; 1 ft. Usually a pedal stop of 2 ft. or 1 ft. pitch.

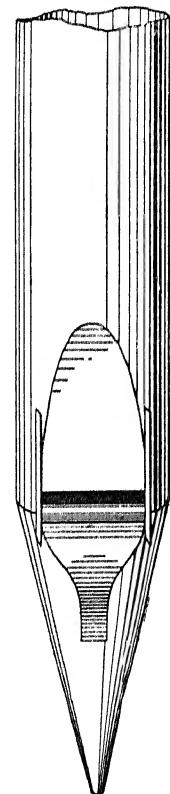
The *Bauerflöte* was composed of stopped wooden pipes of small scale, sometimes with chimneyed stoppers. The tone was bright and clear. The stop was much used on the Pedal organ, especially for giving out the melody of chorales. It was sometimes known as *Choral-Basset*. According to Mr. Abdy Williams, *Prætorius* says that the Germans thought a great deal of this stop, but the Italians despised such small bass stops as “mere empty octaves.” St. Jacobi, Hamburg (Abt Schnittker); St. Dominico, Prague; St. Peter, Görlitz (Casparini, 1703).

Beard Bar, Bridge, Frein Harmonique (*q.v.*), Roller.

A mechanical appliance frequently attached to the mouths of small-scaled flue pipes to assist their speech. The word "beard" is the generic term for a host of varieties, of which the principal types are the "bridge" or "bar," the "roller" and the "*frein harmonique*." The bridge is a flat or shaped piece of wood fixed across the mouth of the pipe—sometimes attached to the underside of the ears, and then known as "box-beard" or "fender," or the device as "box-eared." The roller is a round piece of wood fixed in between the ears. It is attached to them by means of pins or by the process of punching the ears into the roller. Occasionally rollers are made of brass or phosphor-bronze, and for small pipes some capable voicers use aluminium in preference to wood. For illustration see SALICIONAL. The *frein harmonique* is a metal roller or flat beard attached to a spring, soldered on to a metal pipe or screwed on to a wooden one. It was invented by Charles Lemaire, a voicer in the employ of Zimmermann, the pipe-maker of Paris, and was brought out by Gavioli et Cie of the same city, the well known orchestrion makers. The claim to superiority is based on the fact of its adjustability. But it is altogether questionable whether this feature is desirable, as the delicate adjustment is very liable to accidental derangement by a hurried or careless tuner. The only examples in this country with which the author is acquainted are at Derby Road Chapel, Nottingham (Conacher), and St. Mary, Westwood (Conipton). But frequently the name *frein* is indiscriminately applied to other varieties of fixed beard.

As early as 1878 a removal brass roller was invented by Herr Sauer, of Frankfurt-on-the-Oder. Except occasionally in the case of large pedal pipes, the roller, on account of the superior results and greater facilities for manipulation and delicate adjustment it offers, has almost entirely superseded the bridge. Some German builders and Messrs. Walker employ a *plano-concave* variety of beard presenting a broad surface concave to the mouth of the pipe. Whether improved or facilitated results are thereby obtained the author cannot say.

It is generally supposed that bars were introduced into this country by Schulze, and rollers by Lewis. It is, therefore, of interest to note that a bearded Dulciana by Snetzler exists at All Saints' Church, Pavement, York. The Snetzler Dulciana at Beverley Minster is also bearded, but in this case the beards are probably a later addition.



Frein Harmonique
(adjustable).

The action of the beard has not, so far as the author is aware, been explained in any English published treatise; he may therefore draw attention to the fact that it was demonstrated by Cavaillé-Coll, as early as 1840, in his "Etudes Expérimentales." The function of the bridge or roller is to intercept and check the indraught of air induced by the rapid flow of wind through the flue or wind-way and up to the upper lip. This indraught of wind may easily be detected with a lighted cigarette or smoking taper. By thus checking this, the amplitude of vibration is increased. If the finger be held so as partly to cover the nozzle of a hose-pipe, the stream of water issuing therefrom will be deflected and describe an arc or curve. Similarly—to continue the rough illustration—the wind as it emerges from the flue of the pipe curls away from the frein, but by the return swing of the vibration it is caused to curl *round* the frein to a corresponding degree.

The use of beards has entirely revolutionized "string tone" voicing. Previous to their adoption the use of small-scaled flue pipes with low mouths in the production of keen string tone had been unsatisfactory, on account of the disagreeable defect of speech known as "spitting," in the process of which the pipes sound a harmonic before the ground tone, a defect which, moreover, can only in some measure be avoided by the equally serious one of causing the pipe to be slightly hesitating in its speech. The application of a beard to a pipe which has overblown into its octave will at once restore the ground tone; hence both "spitting" and sluggishness of speech can be remedied by this means. For an instance of extreme scaling rendered possible by the use of beards see *VIOLE D'ORCHESTRE*.

It is quite a fallacy to suppose that bearding, apart from details of scaling, renders a pipe keen in tone. Dulcianas may be bearded without their distinctive quality of tone being to the least degree impaired. In other words, beards may freely be employed for the purpose of securing promptitude of speech. The precise reason for the cavilling statements sometimes directed at the practice of bearding pipes would seem obscure. The addition of "side-beards," as ears are named in Germany, is not regarded as a needless distortion of the pipe, nor would it appear conceivable that a bearded Violone, possessing as it does excellent blending property and ample *body* of tone, could be excluded from the category of "legitimate" organ tone, whatever that somewhat hard-driven catchword may be held to comprise. Commenting on the rather fatuous cuckoo-cry use of the word "legitimate," one inventor of ingenious organ mechanism, in a letter to the author, expressed his conviction that when it was originally proposed to substitute for the human lungs bellows to blow the primitive organ, the change must have met with opposition from the "authorities" of the day as not "legitimate."

Bell—An inverted truncated cone, sometimes affixed to the top of organ pipes. See **BELL DIAPASON**; **BELL GAMBA**.

BELL DIAPASON—Flûte-à-Pavillon.(Fr.) Pavillon = bell. 8 ft.

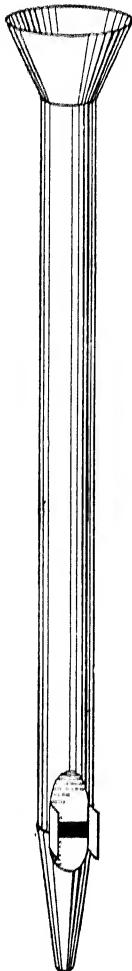
A Diapason pipe surmounted by a bell of inverted conical shape. It was first introduced into this country in the organ by Ducroquet of Paris at the 1851 Exhibition. The tone being full and rich, the stop rapidly became a great favourite, but, like the Bell Gamba (*q.v.*), has now fallen into disuse. It was extensively used by Messrs. Bevington and Messrs. Halmshaw, of Birmingham. John Courcelle, who afterwards became a famous reed voicer (the firm is now Palmer & Co.), voiced Bell Diapasons of great excellence. He, or some admirer, named the stop Courcellina, in consideration of his accomplishments (as at St. John, Portsea). Brompton Oratory (Bishop).

BELL GAMBA—Glocken-Gamba. (Ger.)

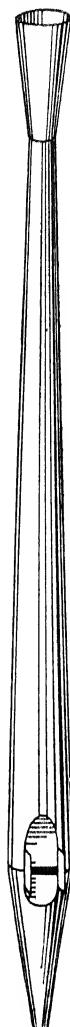
Glocke = bell. 8 ft.; rarely 16 ft.

A large scaled Gamba pipe surmounted by a “bell.” The latter appendage would seem to have the effect of imparting to the tone a more reedy or pungent character, acting as a speaking trumpet or Megaphone. The pipes themselves are cylindrical in shape. The pattern of Viola-da-Gamba, invented by Mr. William Hill, and formerly extensively used, is a tapering Gemshorn pipe with a bell on the top. It emits rich and reedy tones of great refinement, at times even resembling a Cor Anglais in the lower portion of the compass. Flue pipes with bells are now in this country practically obsolete, on account of the difficulties attendant on their tuning and regulation. The pipes and bells were usually cut approximately to the correct length, and the stop provided with long ears for tuning purposes. But this process of shading the mouth was often liable seriously to impair the “regulation” (*i.e.*, strength and quality

of tone) of the pipes. Nevertheless, in many instances, satisfactory results were empirically arrived at, and this objection has in time



Bell
Diapason.



Bell Gamba
(Hill
pattern).

past been somewhat exaggerated. The main reason for the disuse of stops requiring to be tuned by means of the ears was the difficulty encountered in getting at the latter. Sandwiched in between other stops, possibly on a crowded sound-board, it will be seen that delicate manipulation was a matter of no inconsiderable awkwardness. Under the same category as the Bell Gamba and Bell Diapason falls the old-fashioned type of Rohrflöte and such Harmonic Flutes as are provided with long ears for tuning purposes. The author, personally, would be the last to disparage keen string Gambas, believing them to be amongst the most beautiful and valuable of modern achievements in voicing. There is, albeit, no valid reason why they should be cultivated to the exclusion of other varieties, and be duplicated on both Swell and Choir organs. It is much to be desired that some attempt be made to reproduce the beautiful old-fashioned Viola-di-Gamba tone from a pipe of more practical form. A 16 ft. Glocken-Gamba occurs on the Pedal at Grace Church, New York (Roosevelt, 1878).

Bells—See CAMPANA, CARILLONS.

Bible-Regal—(Ger.) Bibel-Regal. See REGAL.

Bifara—Bifra, Bifra, Tibia Bifara, Piffaro. (Late Lat.) Bifarius = two-wayed, double. Piffaro is an onomatopœia suggested by the “piff” or lip-tone of the orchestral Flute. 8 ft. ; 4 ft.

The description of the Bifara given in ancient organ literature has puzzled modern writers not a little. It is said to have been a wooden double-mouthed pipe, with the block so set that one mouth was higher than the other, and with the bore so small as to admit but a limited supply of wind. As the result of these peculiarities a pleasant undulation, rather lighter than that of the Unda Maris, is said to have been obtained from the one pipe. St. Wenceslaus, Naumberg; Walterhausen (1730). Seidel, commenting on the latter example, remarks that though he had several times played on the organ at Walterhausen, he had never had any such effect brought to his notice. If the effect occurred at all it could only have been a sort of “wobbling” of the tone. But Sponsel, in his “Orgelhistorie,” (p. 105) utters the following remarks: “It is the quietest, softest and most charming register conceivable. The pipes are of Prinzipal scale, but the feet are plugged, having only a very small opening bored through them. Two of these pipes are apportioned to each key, but so tuned as to be slightly discordant to each other and give rise to an undulation. It can only be carried through the two upper octaves. In the two lower ones it is represented by a quiet Flute, so that, when the organ possesses but one manual, the stop can be played throughout the compass. It can only be played on very slowly, and serves instead of the Tremulant for conveying

the effect of grief." This statement, emanating from a writer who was the contemporary of the learned Benedictine, Dom Bédos, should suffice to account for the tradition that the Bifara was a stop of undulating tone.

In Germany, the name Bifara is still occasionally found applied to the *Doppelflöte* (Paulskirche, Frankfurt-am-Main, Walcker, 1833). Under the name Bifra, Walcker, of Ludwigshurg, has used two pipes to a note—the lower (of 8 ft. pitch) stopped, and the upper (of 4 ft. pitch) open and of slightly stringy tone and small scale. With separate Tremulant at Boston Music Hall (1857-63); Riga Cathedral (1883); Paulskirche, Frankfurt (1883); St. Stephansdom, Vienna (1886). As Piffaro this firm has also used a similar arrangement of 8 ft. and 2 ft. pipes at Riga, Vienna and Ulm. At Boston, 4 ft. and 2 ft.

Blockflöte—Corrupted to Bockflöte or Plockflöte. *Tibia Vulgaris* (Lat. = Common Flute). *Anglice*, Blockflute. 16 ft.; 8 ft.; 4 ft.; 2 ft.

Father Smith used the term, as did also his contemporary German builders, to designate a huge Fifteenth several scales larger (proportionately) than the Diapason. The Blockflöte was sometimes composed of stopped pipes, at other of conical pipes. Originally imitative of the *Flaut-à-becq.*

Blower—A signal to that worthy functionary by means of bell, clapper or whistle.

Bock-Schwebung—(Ger.) Bock is sometimes loosely employed for *Ziegenbock* (= he-goat). The verb *bocken* signifies to buckjump. Schwebung = Tremulant.

Bock-Schwebung was the term employed to describe a Tremulant of inordinately powerful beat. The derivation may relate simply to the jumping of the apparatus or to its resemblance in effect to the wavering of a goat's bleat.

Boehmflöte—Boehmischeflöte. An ordinary Flauto Traverso.

Named after Theodore Boehm, who invented a new form of the Orchestral Flute in 1832. Not Bohemian Flute, as has erroneously been advanced.

Bombarde—Bombardon. Bass-Bommer; Bass-Brummer; Bass-Pommer (Pommer is old name for Oboe, and Bass-Pommer for Bassoon). Pedal 32 ft.; 16 ft. Manual 16 ft.; occasionally 8 ft. Very rarely abroad as pedal 8 ft.; manual 4 ft.

Synonymous with our word "bombard." As Dr. J. W. Hinton has not inaptly observed, the term appears to have been successively applied to that organ stop or instrument, which, for the time being, was capable of the most imposing and thrilling effect. The original derivation is onoma-

topœic. (Lat.) Bombus signified the buzzing of bees, or the hoarse blast of a trumpet; (Ger.) Brummen = to growl or mutter. Formerly a stop midway in power between Trombone and Bassoon, often capped at the top. The name is now generally applied to a very smooth and deep-toned Trombone of some intensity. There is a very fine example of 16 ft. pitch, playable in chords, on the Solo organ at Worcester Cathedral (Hope-Jones), and another of wood, 16 ft. and 32 ft. extension at York Minster (Walker), labelled Trombone. Free reeds have often been employed abroad. Concert Hall, Cincinnati, 32 ft. (Hook & Hastings). Schulze used them at Doncaster in 32 ft. and 16 ft. pitch.

Bordunal—Bordunalföte. See PORTUNAL.

Bötze—A small-scaled reed occurring at Stralsund.

Bouché—(Fr.) = stopped.

Bourdon—(Ger.) Bordun. For Grand Bourdon see under (1) Acoustic Bass, (2) Grand. (Fr.) Bourdon = pilgrim's staff. (Provençal) Bordo = staff or crutch. Hence, from the resemblance of the drone pipe of the bagpipes to a staff, (Fr.) Bourdon = the droning of a bagpipe or buzzing of bees. Akin to (Eng.) burden, as in "the burden of the song." But possibly onomatopœic in origin. (Gaelic) Burdan = humming, the imitative character of which is supported by the use of "durdan" in the same sense. (Breton) Bouda = buzz or murmur, akin to (Old Eng.) burble, and (Eng.) bubble. See Hensleigh Wedgwood, "Etymological Dictionary," and also Bombarde. A mediæval Latin name was "Tubæ æneæ calami majores organorum!" In Germany a manual stop of 16 ft., 8 ft., and pedal of 8 ft. tone. In France a manual stop of 16 ft., 8 ft., and pedal of 8 ft. tone. In England a manual or pedal stop of 16 ft. tone only. Invented (16 ft.) in Holland *circa* 1508.

The term Sub-bass is more correctly applied to the 16 ft. pedal stop. It would be a plan worthy of adoption in this country to reserve the name Bourdon for the manual or for a *second* closed stop of this pitch on the Pedal organ (either independent or borrowed from a manual—Bourdon when from the Great, Echo Bourdon when from the Swell). The Bourdon consists of stopped wooden pipes of rectangular shape varying considerably in scale. The writer has met with scales so absurdly small as CCC $4\frac{1}{2}$ in. \times $3\frac{1}{2}$ in. on manual, $5\frac{1}{2}$ in. \times $4\frac{1}{2}$ in. on pedal. Schulze used 11 in. \times 7 in., cut up $2\frac{1}{4}$ in. Messrs. Forster & Andrews at one time voiced excellent specimens 8 in. square, cut up $2\frac{3}{4}$ in. The CCC Bourdon pipe at St. Mark, Mansfield (Brindley & Foster), measures 11 in. \times $8\frac{1}{2}$ in., and one by Walker at St. Werburgh, Derby, 12 in. \times $10\frac{1}{4}$ in. A certain

Dr. Hayne, a great organ enthusiast of his day, and author of a book of advice to organ purchasers, was a great advocate of large scales. He had some pipes, scaled to CCC, 13 in. \times 11 $\frac{1}{2}$ in., made, and claimed that they gave as good a tone as open pipes. They were known as "Hayne's Tubs." A full sized Bourdon scale may be taken as 10 in. \times 9 in., the mouth being cut up $\frac{2}{3}$ of the width.

The distressing fault of most Bourdons is their irregularity and the "coughing" of the harmonic (the twelfth), and in this latter respect they excel. Small scale Bourdons are very prone to be "twelfthy" (or "fifthy," as it is usually called). The most satisfactory results are undoubtedly to be obtained from pipes of large scale with thick lips cut up rather high. Mr. J. W. Whiteley (formerly of London, now in America) occasionally covers the lips of his Bourdons with felt. An example may be heard at St. Stephen, Wandsworth, London, S.W. (see LEATHERED LIP). A large scale does not necessarily imply a *loud* tone; it imparts, rather, fullness and pervading character. The wind supply is sometimes regulated by a strip of metal thrust in through the side of the pipe-foot. This device is frequently apt to disturb the speech of the pipe by causing an eddy; a disc in the pipe foot is probably superior. This again, with a fair pressure of wind, is apt to cause the defect known as "fizzing," but all these are defects that have to be overcome by empirical methods. There is generally, in moderate sized instruments, some difficulty in determining the strength of this stop. It is often the only 16 ft. pedal stop, and has to do duty alike in loud and soft combinations. The result is generally a very bad compromise between the two. In the author's estimation it is ordinarily far better voiced to suit moderately soft combinations than full organ.

Acoustical phenomena of some peculiarity are sometimes experienced in dealing with Bourdons, and also—though less frequently—with other large pedal pipes. In some portions of the building a note may be almost inaudible, whilst two yards to the right or left it may sound particularly well. Mr. Casson attributed this effect to the poverty-stricken chord of harmonics of stopped pipes, and suggested as a remedy a revival of the idea of the old "Helper" (q.v.)—viz., of employing a Bass Flute of quiet open pipes to impart definition, with the idea of producing an effect, when sounding together, something like that of an open pipe. But the phenomena is not by any means confined to stopped pipes, though, on account of their dulness of tone, it is more frequently encountered in connection therewith. The author has noticed it in the case of Major Basses. It is probably due to the fact that the sound waves advance in great loops, and is undoubtedly mainly dependent on the acoustical properties of the building. The best remedy would seem to be that of planting the pipes so as to speak against a reflecting surface.

As a manual stop the Bourdon demands much more intelligent treatment than it is usually accorded. Contrary to the generally accepted idea, the author does not advocate its inclusion on the Swell organ. Its proper place is on the Great, and even there, of course, an open stop is preferable. Unless rigid economy is essential, a Contra Viola will be found far more valuable on the Swell. An open pipe, on account of the greater development of its upper partials, is affected more than a closed pipe by the swell *crescendo*. Failing an open pipe, a Quintatön (*q.z.*) will be found more useful than a Bourdon. It is a mistake to cut the harmonics out of manual Bourdons, as their blending and timbre-creating capacity is thereby seriously impaired. The ordinary Swell Bourdon is muddy, thick and unblending, with a tendency to destroy all definition and clearness of tone on that manual. The bass of a manual Bourdon should be kept very quiet, but by bringing out the treble with some degree of boldness (as *e.g.*, by Hope-Jones, Binns, Compton) the utility and general effect of the stop is considerably enhanced. It is in the middle and bass portions of the compass that a double most readily becomes objectionable; a powerful treble is by no means out of place, but rather open to effective use *solo* or in *ensemble*.

It is sometimes said that the Bourdon increases the strength of stops speaking an octave higher, whilst only adding a slight fullness to those of the same pitch as itself. This statement is only one of the many "bogies" connected with organ building. It is certainly very apt to overbalance the unison, and to give the impression of a very thick, muddy, sub-octave tone; but, inasmuch as the octave is a partial absent from stopped pipes,* the Bourdon can scarcely strengthen the unison, though it may be that it causes the unison to assume greater prominence, acting as a kind of background.

Contra-Bourdon, Sub-Bourdon, or Untersatz, is a Bourdon stop of 32 ft. pitch. It is sometimes found on the manual down to tenor C (Doncaster Parish Church), but a Dolce or Quintatön is more suitable for such a position. On the Pedal, Schulze recorded that "the lower notes were not worth the wood they were made of" (Robertson). Some firms (*e.g.*, Hook & Hastings, of U.S.A.; Hunter, of Clapham) claim to be able to continue the stop down to the lowest pipe in pure notes. The difficulty in the case of the lower notes is that harmonics become prominent, and when the mouth is cut up higher to reduce them, the wind does not reach the lip. If more wind be now given, the harmonics will again appear. It

* The octave and the nineteenth are occasionally faintly perceptible in the upper portions of the compass of large scaled Bourdons—a point which would seem to be absolutely at variance with the teachings of acoustics. This, of course, is a *quaintile* negligible so far as our present argument is concerned.

would seem almost as satisfactory, and certainly more inexpensive, to produce the notes below FFF acoustically (see Acoustic Bass). In France the name Bourdon is used to designate all stopped or half-stopped pipes of any pitch which form part of the organ tone proper.

BOURDON IN TWO POWERS—A device which has been employed for surmounting the difficulty referred to under the preceding heading, namely, the inability of the single pedal stop to do duty alike for loud and soft manual combinations.

It consists merely of a mechanism for altering the wind pressure supplying a single set of Bourdon pipes. In the case of the lower notes the effect is satisfactory enough, but the upper notes are thrown perceptibly out of tune. Denton Chapel, near Manchester; Berkhamstead School; Aberdeen University; Presbyterian Church, Shields; St. James, Congleton; Parkgate School, Cheshire—(Hope-Jones). Longwood House, Nayland—(Casson). Mr. Compton of Nottingham has, however, introduced with conspicuous success a very simple compensating device, whereby it is possible to use the Bourdon in two degrees of power without the pitch being disturbed to the least degree. The tone of the stop is satisfactory under both conditions of winding when due care is expended on the voicing. All Souls' Church, Radford, Nottingham.

Bourdonecho—See ECHO.

BRIDGE—See BEARD.

Brummhorn—See KRUMMHORN.

Probably onomatopœic in origin, signifying buzzing or booming (see Bombarde).

Buccina—(Lat.) = shepherd's horn. (Lat.) Bucca = a cheek, more particularly the soft portion of the cheek covering the hollow of the mouth. Buccina is by some derived from Bucca, inflated checks being required to blow it.

Burdo—A corruption of Bourdon, occurring in ancient specifications.

Buzain—A Dutch corruption of Posaune.

C.

Calcan—4 ft.

A Flute at Freiburg Cathedral in Switzerland. The organist, on being applied to, courteously replied that it was a stop of subsequent addition, the stop handle attached to the communication with the blower (Calcant) having been requisitioned!

Calcant—(Lat.) Calcare = to tread.

Derived from the primitive method of blowing by treading the bellows, *i.e.*, depressing them by the human weight. A signal whereby the player may communicate with the blower. See **BLOWER**.

Campana—Campanella; Campanette; Glöcklein (*q.v.*); Glöckleinton; Tonus Fabri (*q.v.*). 2 ft.; 1 ft.; 6 in.

A stop of shrill pitch, usually 1 ft. or 6 in. "repeating," *i.e.*, breaking back, to a similar pitch at every octave. It was employed by Messrs. Bryceson in the organ at St. Paul, Rusthale, near Tunbridge Wells (1876), at the suggestion of Dr. Gown (then organist there, afterwards at Trent College), as a large-scaled cylindrical pipe of 1 ft. pitch. The stop served to fill up the Mixture work, but it was used mainly to produce a bright bell effect. It told prominently through even the full Swell of fourteen stops. Seidel describes the Campana as resembling the beating of hammers on a sonorous anvil. Lund Cathedral, Sweden, "Flauto di Pan," 2 ft. and 1 ft.; St. Peter, Görlitz (Casparini, 1703); Queen's College, Oxford. See **CARILLONS**.

Campanella—See above.

Campanette—See above.

CARILLONS—Clochettes; Gongs; Glockenspiel; Stahlspiel. (Fr.) Carillon, (Fr.) Clochette, (Ger.) Glocke = bell. (Ger.) Stahl = steel. (Ger.) Spiel = play.

The Carillon or Glockenspiel of the orchestra varies considerably in form. It is usually a set of small bells mounted, one above the other, on a stick, and sounded by being struck with a hammer. Stahlspiel refers more properly to metal bars, similar to those of the toy Harmonika so frequently seen in this country, or to "Tubular Bells." The Carillon stop appears in four distinct forms. (1) Real Bells. Monastic Church, Weingarten (Gabler, 1750). (2) Gongs. Norwich Cathedral (Norman & Beard); Chamber Organ for Mr. H. J. Johnson, J.P., at Oulton Rocks, Staffs. (Binns); Westminster Abbey (Hill). The bars are of steel, and the resonant gongs, over which they are situated, of brass. The latter are tuned by being filled with plaster of Paris till the required note is obtained. Like free reeds, both bells and gongs necessitate the organ being kept at an even temperature; when this requirement is fulfilled—and it is no more than every organ really demands—they remain perfectly in tune. Mr. Johnson kindly informs the author that his at Oulton Rocks stand excellently in tune. (3) Tubular Bells, *i.e.*, hollow steel rods. Merseburg Cathedral (Becker), called Stahlspiel; Bolton Town Hall (Gray & Davison, 1874). Tubular Bells have also been recently used by Binns. (4) A Mixture (see also **CAMPANA**). III ranks, Westminster Abbey (Hill);

IV ranks, Sydney Town Hall (Hill); Manchester Town Hall (Cavaillé-Coll). The pipes are of course very high pitched. At Manchester Town Hall the stop is always used with the Cor de Nuit. It is composed of one rank ('twelfth) to tenor F sharp, above that of three ranks 12, 17, 22. From the said note it actually runs up to top C⁴ (in altissimo) without a break. The pipes, with the exception of the top few, are all slotted for tuning purposes. The top pipe measures $3\frac{1}{2}$ in. long.

It is questionable whether pipes of such microscopical dimensions are audible to the average human ear. Some persons of abnormal hearing, unable, however, to distinguish low bass notes, can detect the cries of insects too shrill for the average person to notice, whilst others, perceiving low notes more easily, are frequently found to be positively unable to distinguish the top notes of a Fifteenth. At the same time these shrill pipes produce resultant tones of some power. The effect of the Glockenspiel at Westminster Abbey, and Carillon at Manchester, seemed to the author excellent. Stops of this class, whilst useful as ordinary Mixtures, are particularly effective for use in such recital pieces as "Carillons de Dunkerque" (Carter), "Rondo di Campanelli" (Morandi), "Air composed for Holsworthy Church Bells" (Wesley). The difficulty, however, lies in their tuning, and the author has heard such excellent effects produced from a Quintatön, or Cor de Nuit, of modern voicing—a stop vastly more useful, and free from the disadvantages attendant on such small pipes—that the use for the Carillon of Mixture pipes would seem to him unnecessary.

The late Mr. W. T. Best obtained peculiar effects of this type by the use of mutation work, and of such combinations as Double, Fifteenth and Vox Humana. The best recipe for the production of bell effects from organ stops, with which the author is acquainted, is that of Mr. T. Tertius Noble, the able organist of York Minster. It consists of Great organ Waldflöte, or Gedackt 8 ft., or both, to which is coupled Solo organ Harmonic Flute, 8 ft. (box closed) and Tremulant. Sometimes the Vox Humana, the String Gamba (box closed), or even the Céleste is added as a slight colouring. The essence of the effect lies in the two Flute tones in which, by the action of the Tremulant, is induced a slight disparity of pitch. The discordant beating of the bell is thus simulated, the more faithfully if the Solo swell pedal be sparingly requisitioned for *sforzando* effects. Other examples of Glockenspiel occur at St. Michael, St. Catherine, St. Jacobi, St. Nicholas, Hamburg. According to Hamel, at St. Michael, Ohrdruff, it is of steel bars, and of complete manual compass.

Cedirne—4 ft.

A stop of metal, probably string-toned (Cithern), used by Renatus Harris at Magdalen College, Oxford, (1690).

Céleste—See Vox CÉLESTE.

CELESTINA—Celestiana. 4 ft.

A delicate wood Flute, of open pipes, invented by William Hill. An example formerly existed at Christ's Hospital, London (Hill). There was a touch of Dulciana quality in the tone. A similar Flute was employed by Schulze at Doncaster. A metal Celestina of louder tone occurs at the Albert Hall, London (Willis, 1871). The name was also applied by Mr. Hope-Jones to an undulating Phoneuma. St. Michael, Chester Square, W.; St. Barnabas, Linthorpe, Middlesborough; Crompton Fold, Bolton; Pilton Church, Devon.

CELESTINA—VIOL—4 ft.

An octave Viole of quiet tone. St. John's Cathedral, Newfoundland, (Robson).

'CELLO—See VIOLONCELLO.**Chalumeau—(Ger.) Schalmei, Schalmey, Shalomo; (Fr.) Chalemie.**

Akin to (Eng.) Shawm. (Lat.) Calamus = a blade or stalk. 16 ft.; 8 ft.

The primitive Chalumeau was the Alpine Shepherds' pipe made of a flat piece of green willow bark. The later instrument, which is found scored for by Glück, is undoubtedly the precursor of the modern Oboe, Clarinet, Bassoon, etc. The name is now applied to the peculiarly hollow low register of the Clarinet. The first known example of the organ pipe of that name—the first reed stop of the organ—was at the Frauenkirche, Nürnberg (Conrad Rothenburger, *circa* 1463). Another early instance was at St. Martin, Danzig (1585).



Chalumeau.

The construction of the Chalumeau appears to have afforded early builders much scope for the exercise of their inventive genius or imaginative powers. Some of the extraordinarily fantastic shapes of the pipes are depicted in Hamel's edition of Dom Bédos (Plate XXIX). The form of Chalumeau depicted in the illustration is an authentic early pattern; later on, however, the pipes were made like the Trumpet, though of larger scale. The tops were sometimes covered with muslin. This device was said to have kept the tone softer, but was more probably employed to keep out dirt from the pipes (see REED). As the art of reed voicing progressed, the Chalumeau, like the Oboe, became classed as unimitative organ tone. Now it is practically synonymous with Musette, and is made as either a free or a beating reed. Continental examples are not uncommon, though the stop

is rapidly falling into disuse. Christuskirche, Hirschberg; St. Michael, Hamburg; Marienkirche (2nd organ), Lubeck; Catholic Church and Frauenkirche, Dresden (Silbermann, 1734 and 1736 respectively); St. Peter, Görlitz (Casparini, 1703). At Washington Temple, U.S.A. (Kimball Co.), the stop is described as of "grave, sinister tone, of supernatural effect, sepulchral." The organist, Dr. G. W. Walter, who designed the instrument, kindly informs the author that it is a 16 ft. beating reed, with maple shallots and metal bodies, of Bassoon scale. The tongues of the lowest octave are scaled to "fly up" to pitch. With normal tongues quality would be obtained only at the expense of promptitude of speech and *vice versa*. There is a 16 ft. Schalmei in the organ at the Colston Hall, Bristol (Norman & Beard). It is composed of cylindrical pipes surmounted by a capped bell. In the treble the tone resembles that of a broad-toned Cor Anglais; in the bass that of a Clarinet with a touch of French Horn quality added. The stop is a valuable acquisition to the "wood-wind" effects of this organ.

CHAMADE—Trompette-à. (Fr.) Chamade = Parley.

Trumpets so arranged as to blare directly out. See FAN TRUMPET.

CHIMNEY FLUTE—See ROHRLÖTE.

Chirimia—Clarion. Former organ at Seville Cathedral.

Choral—A prefix signifying that the stop so designated was specially intended for use in "giving out" the melody of a chorale. **Choralbasset**, a 1 ft. Bauerflöte on the Pedal organ (*e.g.*, Kindelbrück); **Choralprincipal**, 4 ft., a loud Principal.

Chormass—A prefix signifying unison pitch. Synonymous with *Æqual*. *e.g.*, **Chormassprincipal**, 8 ft. **Posaune-unter (under)-Chormass** = Contra Posaune, 16 ft.

Cimbalstern—See CYMBALSTERN.

Cink—See ZINK.

CLAIRON—(Fr., It.) = Clarion.

Clarabella—Claribel Flute. (Lat.) *Clarus* = bright; *Bellus* = beautiful. 8 ft.; 4 ft.; occasionally 16 ft.

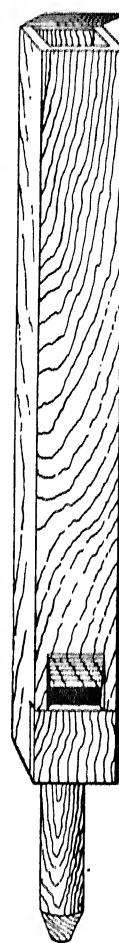
The Clarabella was invented by Bishop as a substitute for the treble of the Great organ Stopped Diapason, which he felt to be insufficient to cope with the rapidly increasing depth and volume of Diapason tone. Hence the customary break of the 8 ft. stop into a stopped bass at mid. C. The English Hohlföte is harder and thinner in tone than the Clarabella, which may be said more to resemble the German Hohlföte or Portunalföte. The pipes are of wood, open, of large scale, and consequently of dull, velvety and cloying tone, with a minimum development of upper partials. During the past decade the Clarabella seems to have largely



Harmonic
Claribel Flute
(Willis).

fallen into disuse. It forms an exquisite solo stop. In the sense that the pedal Major Bass 16 ft. is termed a wood Diapason, the Clarabella is the wood manual Diapason.

In the original Bishop examples, which, in the author's estimation, have not been surpassed, the mouth is on the narrow side of the pipe, and, contrary to the subsequent, though perhaps not altogether commendable, practice of some voicers, it is not inverted. There are excellent examples of the Bishop stop at St. Mary, Nottingham (1871); St. George's Cathedral (R.C.), Southwark; Brighton College; Brompton Oratory. The Willis variety of the stop (Claribel Flute), though first constructed of wood, was later made of metal and was of harmonic form. In some instances large holes were pierced in the pipes both in the centre and at the top. The size of these apertures could be regulated by means of overlapping (tuning) slides (only one of which is shown in the accompanying illustration) (see KERAULOPHON). In the author's estimation the tone is less pure, and more hooting, than that of the Bishop variety. Those who like harmonic stops as Great organ foundational Flutes will probably find it the least harmful variety. The Claribel Flute still exists in many Willis organs. The octave Clarabella is a useful Choir organ stop. *Scales*—Bishop Clarabella: CC (stopped) $4\frac{3}{4}$ in. \times $3\frac{3}{4}$ in.; Mid. C (open) $1\frac{7}{8}$ in. \times $1\frac{5}{8}$ in. Willis Claribel Flute: CC (stopped) 4 in. \times 3 in.; Mid. C (open, metal) 2 in.; Mid. G (harmonic) $1\frac{7}{8}$ in.



Clarabella
(Bishop).

Clariana—Clariona. Very rare. 8 ft.

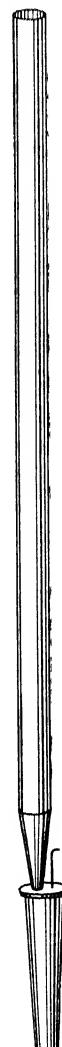
(1) A metal Gamba of ringing keen tone. Brooklyn Tabernacle, U.S.A. (Jardine & Co.); (2) An Echo Dulciana.

Claribel Flute—See CLARABELLA.

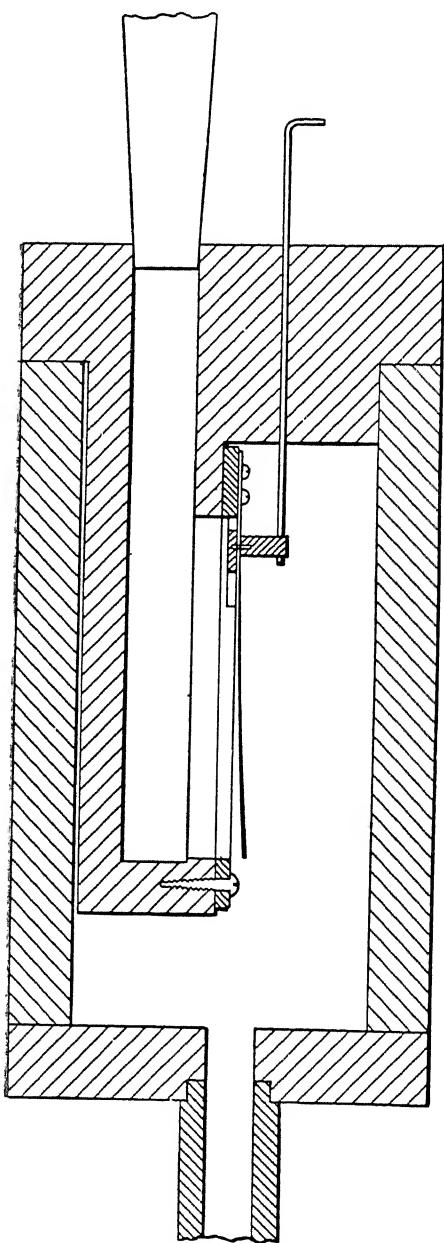
Clarinet—(Ger.) Klarinette; (Ger. and Fr.) Clarinette; (It.) Clarinetto, and sometimes Corno di Caccia (*q.v.*). With which are grouped Corno di Bassetto; Orchestral Clarinet, Cremona; (Fr.) Cormorne, Cromorne; and (Ger.) Krummhorn. 8 ft.; occasionally 16 ft.; very rarely 4 ft.

Clarinetts of 4 ft. pitch occurred at St. Alessando, Milan; Hoforgel, Dresden, (Silbermann). The name Clarinet is derived from the Italian Clarino, a small Trumpet. The version, Clarionet, is supposed to spring from the English, Clarion. Even if not absolutely inaccurate, it is certainly not to be commended. Cremona is a corruption of Krumm-Horn, or Cromorne, the adoption of which name has in time past led to the idea that the stop was intended to imitate the Cremona Violin. The following extract from a Voluntary Book (dating from the end of the XVIII Century) by one Jonas Blewitt, is both amusing and instructive, showing the state of contemporaneous reed-voicing, as well as illustrating our point:—"It is supposed to assimilate with the Fiddle so named from a city renowned for making those instruments; yet, I think it by no means a good imitation, it being nearest in tone to the Violoncello, therefore, the middle or tenor part of the organ should be used in adapting music to this stop." Corno di Bassetto represents the old Bassett Horn, a tenor Clarinet. Krummhorn (Ger. = crooked horn), had originally reference to a variety of Shawm or Horn, now obsolete, provided with six holes, and, at the lower end, semicircular in form. Cor Morne is variously represented as derived from (Fr.) Cor = Horn, Morne = dull or gloomy, or Morne = Mountain. The name Cromorne is an intermediary between Cormorne and Krummhorn.

In modern times, in this country, if any distinction at all be drawn, the Corno di Bassetto is generally a fuller and richer toned stop than the thin and piquant Clarinet. In old organs when the Clarinet extended only to tenor C, the name Krummhorn was applied to a Clarinet carried down to the F below, with the tube bent towards the middle, similar in appearance to that of a Fan Trumpet. This is now obsolete and the name may refer to any variety of Clarinet. In England the Clarinet is exclusively made as a stop with pipes of cylindrical shape; but in Germany the Krummhorn or Klarinette, and in France the Cormorne or Corno di Bassetto, is often either a cylindrical pipe surmounted by a bell (Cornet-à-Pavillon), and sometimes pierced as the Keraulophon, or one of inverted conical shape. In such cases it is also occasionally voiced as a chorus stop, even as a soft Trumpet standing side by side with a loud Trumpet on the Great organ (St. Denis, St. Vincent de Paul, Paris). In Germany and Switzerland the Clarinet is almost always a free reed of moderately large scale, and, compared to our style, frequently of very poor, thin and colourless tone. The author, however, heard an excellent free reed specimen



Clarinet.



Free-reed Clarinet (Stahlhuth).

with conical bodies at Aix-la-Chapelle Kurhaus (Stahlhuth). It was a good representation of the orchestral instrument—not necessarily therefore all that could be desired in an organ stop, for the latter is more consistent and regular in tone throughout the compass than the former. The author has in his possession a replica of one of these pipes kindly made for him by Herr Stahlhuth.

The Clarinet is a stop of "short length." By means of a long tongue it is caused to speak at unison pitch, though the length of the pipe is only a little more than that of those of a 4 ft. stop. (See remarks under REED). Its peculiar hollow tone is due to the fact that reed tubes of cylindrical form have the property of strongly reinforcing the odd-numbered partials, those yielded by a stopped pipe. As a matter of fact the even-numbered partials are not usually entirely eliminated from a Clarinet, especially from the lower notes. In the case of the Vox Humana the pipes, though generally cylindrical, are not ordinarily of sufficient length to exert much influence on the tone, to which fact, and to the subdued character of the said tone, is attributable the incompatibility of this stop to the rule above enunciated. Similarly the short pipes of the Physharmonika

are not able to dominate the pitch of that stop. If to the Clarinet tube, however, be added a bell (as above) or a tuning slide bearing around it an eccentric-shaped piece of metal (such as Messrs. Grindrod's "Tubeon"—a device which often effects considerable improvement in the tone of pipes to which it is attached) some even-numbered partials spring into greater prominence, and the tone becomes louder and more Trumpet-like. The Clarinet is sometimes left entirely open, but when on an open sound-board (*i.e.*, not enclosed in a swell box) it is usually half covered with a shade, or sometimes entirely capped, to facilitate regulation as well as for the purpose of protecting it from dust. Occasionally the Clarinet is continued by a bass of Bassoon pipes (*e.g.*, St. Mary, Nottingham; by Bishop). Some of Willis' Clarinets stand on heavy wind pressure with a bore at the bottom of the boot but little larger than a pin-hole. The tone of a good Clarinet is very sweet and clear. Apart from expressive facilities, the treble of the organ Clarinet may be said to be considerably better than that of the orchestral instrument, but the bass of the organ stop can never approach the richness of the Chalumeau (or bass portion) of the orchestral prototype. The lower octaves are difficult to voice free from rattle. In the hands of a master the Double Clarinet is a stop of rare beauty. It was first introduced by Mr. Wedlake in his chamber organ for Mr. H. A. Hankey, London (1863), at the request of Mr. Augustus Tamplin, a celebrated executant of the day—especially for use in Meyerbeer's "Robert le Diable." It is, unfortunately, but seldom made. See also FLUE CLARINET.

Scale—Clarinet: CC, $1\frac{3}{4}$ in.

THE ORCHESTRAL CLARINET is, as its name implies, a stop bearing a somewhat similar relation to the Clarinet, as does the Orchestral Oboe to the Oboe.

It is made of ordinary Clarinet pipes, but voiced to be either very thin and piquant, or full and rich like the Corno di Bassetto. There is a very good specimen on the Solo organ at Westminster Abbey (Hill). As in some French examples the stop is very slightly hesitating in speech, but possesses a delightful piquancy, which would seem to be unobtainable otherwise. This distinctive feature is probably due to the tongue being much curved. The Clarinets in orchestrions are free reeds, usually with square wooden bodies furnished with shades. Welte, of Freibourg (Saxony), the celebrated orchestrion builders, sometimes, however, employ large conical bodies, yielding a tone midway between a Bassoon and a Trumpet.

CLARINET FLUTE—8 ft. tone.

A fairly large-scaled stopped pipe, differing from the ordinary Gedekkt in that the hole through the stopper is larger, the stopper often longer, the mouth lower, the nicking finer and the lip thinner. The large hole in

the stopper relieves the tone of undue development of the twelfth, and a reedy, growling tone, by no means unpleasant, and even somewhat suggestive of the Clarinet (by reason of the odd-numbered partials being mainly present), is produced. Light winding is advisable. The stop was probably invented, and certainly perfected, by Messrs. Gray & Davison, in whose work many examples are still to be found. There is a successful instance in the Great at St. Joseph (R.C.), Stockport. Bishop also used the stop. A Swell organ specimen of his measured at the mid. C pipe $1\frac{7}{16}$ in. \times $1\frac{1}{8}$ in., the height of the mouth (to top of arched lip) $\frac{1}{4}$ in. (very low, under a fourth), the hole in stopper $\frac{1}{4}$ in. The tone is very difficult to preserve, and to control, throughout the compass. Christ Church, Macclesfield; Centenary Chapel, Boston (Lincs.); St. Margaret, Brighton; Bombay Town Hall (Bishop), contain examples by Gray and Davison. The term "Clarinet Flute" is often merely a misnomer for Rohrflöte.

Clarion—Clairon, Clarin, Clarino. (It.) Clarino = a small Trumpet. 4 ft. on manual and pedal.

An octave reed, varying considerably in power and quality according to the 16 ft. and 8 ft. stops with which it is associated. Practically an octave Trumpet. The Clarion should invariably be harmonic in the treble, as thereby not only is the quality improved and the wearisome clang removed, but it is also more likely to stand in tune—a virtue generally beyond the attainments of the true-length pattern. Unless of harmonic construction the top few notes are, as a rule, formed of flue pipes, though Willis carried his reeds right through. **Tuba Clarion** is an octave Tuba.

Clarion Mixture—This stop was used by Messrs. Walker at a time when they had discarded 4 ft. reeds. It was therefore intended to add considerable brilliancy to full organ.

The Clarion Mixture was of III ranks, heavily blown, and voiced to considerable power. Had it been of V or VI ranks it would probably have been less obtrusive, because less bare. See SCHREIER. Holy Trinity, Sloane Street, S.W.; St. Matthew, Northampton; St. John the Divine, Kennington, S.W.

Clavæoline—16 ft.; 8 ft.

A free (harmonium) reed introduced into the organ by Beyer, of Nürnberg, in 1830. The tongues were of nickel silver. It was similar in all respects to its successor, the Physharmonika, save that there existed no device for securing expressive effects by varying the wind pressure. Fulda; St. Wenzeslaus, Naumburg; Perleberg; Salzwedel (Turley, 1838). The Clavæoline has also been made as a soft-toned free reed, with bell-shaped pipes.

CLEAR FLUTE—4 ft.

Invented by Messrs. Kirtland & Jardine, of Manchester. The pipes, which are of wood and nearly square in shape, are open and voiced with an inverted mouth on the narrow side. Sometimes they are not nicked at all. The block is of the German pattern—*i.e.*, as in the Gedeckt—wedge-shaped, owing to which device the wind is supposed to undergo compression as it reaches the mouth. The stop is copiously winded; the tone is clear, dour and hooting, of a type which scarcely blends well, and which does not generally appeal to the listener as particularly musical. Beeston Parish Church, Notts.; St. Peter, Manchester. Scale: CC 4 ft., $3\frac{1}{8}$ in. $\times 2\frac{5}{8}$ in.

Clochettes—(Fr.) = Bells. See **CARILLONS**.

Communicanten-Glocke—A bell employed as a signal to intending communicants to approach the altar, just as the Sacring bell is now so employed. At Walschleben, near Erfurt, it was sounded in the organ.

Compensation Mixture—Compensating Mixture, Corroborating Mixture.

(1) Invented by Herr Musik-direktor Wilke of Neu Ruppin, and first introduced at St. Catherine, Salzwedel, by T. Turley, in 1838, as a repeating pedal Mixture of V ranks ($3\frac{1}{8}$ ft.; $2\frac{2}{3}$ ft.; 2 ft.; $1\frac{1}{3}$ ft.; and 1 ft.). The stop was intended to lend a decisive intonation to pedal notes in rapid passages. Of recent years the difficulty of securing promptitude of speech in pedal pipes has been solved by the use of beards for flue pipes and of pneumatic starters for large reed pipes. (2) A soft Mixture intended to represent the natural harmonics in which the organ, in comparison to orchestral instruments, is deficient. This type of Mixture is sometimes named Corroborating Mixture. A Compensating Mixture of VI ranks occurs on the Pedal organ, and a Corroborating Mixture of V ranks (string-toned) on the second subdivision of the Swell organ in the organ designed by Dr. Audsley for the St. Louis Exposition of 1904 (Art Organ Co., Los Angelos).

Concert Flute—Orchestral Flute. (Ger.) Konzerflöte. 4 ft.; sometimes 8 ft.

Generally on the Solo organ. An instance occurs on the Great at St. Margaret, Westminster (Walker). Though originally identical with the German Vienna Flute, there is now no special signification attached to the name. It might be (1) Flauto Traverso (*q.v.*); (2) Harmonic Flute (powerful); (3) Large open wood stop of the Tibia Major type; (4) A clear-toned Flute of the Waldflöte type.

CONE DIAPASON—See **CONE GAMBA**.

CONE GAMBA—Generally known in this country as *Spitzflöte*.

The Cone Gamba is shaped like a Gemshorn, tapering as the pipe ascends. Though of larger scale it retains the characteristic sweet and bright quality of that stop. It is, in fact, midway in tone between a Diapason and a Gemshorn. Radcliffe, Manchester (formerly the Nave Organ, York Minster, by Hill). The stop known as Cone Diapason is practically a distinction without a difference. Its tone, if anything, inclines rather more to that of a reedy Diapason. Cone Gamba must not be confounded with Bell Gamba, or with the Hill Viola da Gamba (see **BELL GAMBA**).

Cone Gedackt—8 ft. tone. Invented by Mr. Hope-Jones. The only example of the Cone Gedackt occurs in the Choir organ at Worcester Cathedral. Tenor C, 3 in.; Mid. C, $1\frac{11}{16}$ in.; Treble C, $1\frac{1}{16}$ in. in diameter.

The bass is of ordinary Gedeckt pipes with solid stoppers, but from fiddle G upwards a tube of inverted conical shape is fitted into the stopper. In this case the tube is tuned to resound to a note one octave higher than that of the pipe. The octave, a partial absent from stopped pipes (see note under **BOURDON**) is thus introduced, consequently the tone resembles to some extent that of an open Flute. Following in the wake of Professor Helmholtz, Mr. Lewis and Mr. Hope-Jones have obtained some very peculiar and not altogether displeasing effects from Gedeckts by the employment of chimneys of unusual lengths. It is obvious that various upper partials, harmonic and inharmonic, can thus be accentuated or introduced. The chimney may also be extended *inside* of the pipe—with mixed results. In some of Willis' Lieblich Gedeckts the stoppers at tenor C measure as much as 8 in. or 10 in. long.

Coni—See **CONUS**.

Conoclyte—(Gr.) $\kappa\omega\nu\omega\varsigma$ = a cone; $\kappa\lambda\iota\nu\omega$ = I hear; $\kappa\lambda\iota\nu\tau\omega\varsigma$ = audible (?). 8 ft.

At Beauvais Cathedral (1827-1829) were introduced the first examples of the modern type of organ free reed, viz., Conoclyte, Terpomele and Euphone. The two last are rendered expressive by a device for varying the wind pressure. The Conoclyte, which speaks on a fixed pressure, is composed of tin pipes of Gemshorn (tapering) shape. In tone it is a sort of combination of Bassoon and Clarinet.

Contra—(Lat.) Contra = against.

A prefix synonymous with double, indicating sub-octave pitch—*i.e.*, an octave below the unison. For Contra Bourdon, Fagotto, Gamba, Trombone, etc., see respective headings.

Contra Bass—Kontra Bass. 16 ft.

A stop imitative of the double bass of the orchestra. See **VIOLON, MAJOR BASS**.

Contras Profundas—The name applied to the 32 ft. pedal stop at Seville Cathedral (Aquilino Amézua, 1903).

Conus—Coni. (Lat.) Conus = cone.

So named from the shape of the pipe. A Spitzflöte.

Coppel—Copula, Coupling Flute, Koppel. 16 ft. ; 8 ft. ; 4 ft.

A term applied to the Gedackt on account of its supposed use to bind together or mollify stops of extreme tone. The idea still survives in the traditional use of the Gedackt with the Clarinet. The probability is that the early Clarinets were so thin and rough that they scarcely admitted of independent solo usage. The Coppel was also employed in the case of slow-speaking stops—such as Gambas (see GERMAN GAMBA, HELPER). Sometimes the Coppel was composed of open pipes. The name was also occasionally applied to the Gemshorn (why, is a mystery), and to mutation ranks either separately or collectively as a III rank Mixture (e.g., St. Dominico, Prague). Minorite Church and St. Stephen, Vienna (latter by Walcker, 1886); Monastic Church, Weingarten (Gabler, 1750).

Coppeldone—4 ft.

Perhaps a variation of Coppeltone = coupling tone. An Octave. St. Johannis, Lüneburg.

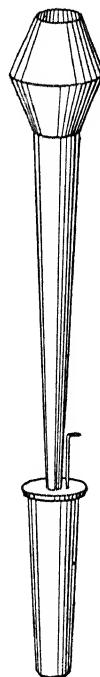
Coppendorff—2 ft. ; $2\frac{2}{3}$ ft. Königsberg. Perhaps Coppel Döff.

Copula—See COPPEL.

COR—(Fr.) = Horn.

Cor Anglais—Corno Inglese, English Horn. (Fr.) = English Horn. 16 ft. ; 8 ft. ; rarely 4 ft.

Formerly a large-scaled free reed, now a small-scaled reed, imitative of the orchestral instrument. The stop was specialized in France as a free reed, and at one time it was customary to import Cor Anglais stops of French manufacture and voicing into England (e.g., St. Peter, Manchester). As recent examples of such imported stops may be cited those in the organs at Castle House, Calne; Derby Road Chapel, Nottingham (both by Conacher). There is also a very fine 16 ft. specimen at Oulton Rocks, Stone (Binns), and another (tongues from Cavaillé-Coll) at Trinity College, Cambridge (Hill). Cavaillé-Coll, however, abandoned the use of free reeds *circa* 1860. Equally satisfactory tone can be obtained from skilfully voiced beating reeds; and these, moreover, have the advantage of being free from that very unfortunate



Cor
Anglais.

virtue of free reeds (*q.v.*) viz., that of standing *too well* in tune. As English builders do not make free reeds, and as the craze for their importation has died out, the Cor Anglais, when made at all, is now usually a beating reed, *e.g.*, Warwick Collegiate Church (Hope-Jones). The shape of the pipe is peculiar, the tube, which widens slightly, being surmounted by a double bell, successively widening and narrowing. The tone of the Cor Anglais is rich, and in the lower notes of a very peculiar hollow and metallic quality. A faithful representation of the tone can often be built up with such stops as Viola da Gamba (old Hill type), combined with a soft Suabe Flute, 4 ft. (see FLUE COR ANGLAIS). Mr. T. Tertius Noble, the accomplished organist of York Minster, employs with remarkable effect the following recipe for Cor Anglais tone:—String Gamba, 8 ft. ; Gemshorn, 4 ft. ; and Clarinet, 8 ft. There is a Cor Anglais of a somewhat singular pattern voiced by Mr. Evennett in an organ at Sale (Lewis). It is composed of pipes of conical shape, surmounted by an adjustable hood.

Cor d'Harmonie—8 ft.

An Oboe bass, probably of Bassoon pipes. St. Denis, Paris. See HARMONIE.

Cor de Basset—8 ft. See CORNO DI BASSETTO.

Cor de Chasse—See WALDHORN.

COR DE NUIT—Nachthorn. (Fr.) Cor = Horn ; (Fr.) Nuit = night ;

(Ger.) Nacht = night. This stop derives its name from the Horn of the night watchmen of olden time. In some places in the south of France the custom still survives of the night watchmen blowing their Horns and announcing the hour and the state of the weather.

Formerly 16 ft. ; 8 ft. ; 4 ft. ; rarely 2 ft. Now usually 8 ft.

(1) A modified form of Quintatön. The prominence of the twelfth imparts a horn-like character, especially in the tenor octave. The pipes are of large scale, and it is essential that the mouth be low. Of this there are two varieties: (a) A stop differing from the Quintatön only in having the twelfth less prominently pronounced. *e.g.*, Washington Temple, U.S.A. (Kimball Co.), Fernhorn (Echo Nachthorn). (b) A Gedackt which, in speech, touches the twelfth, and then drops down to the ground tone only, yielding but little more of the twelfth than the ordinary Gedackt. This type of Cor de Nuit is met with in France. There is an example by Cavallé-Coll in the Celestial organ at Westminster Abbey (Hill). There is also a 16 ft. specimen on the Choir organ at St. Margaret, Westminster (Walker), though bearing the name of Quintatön. Mr. Gern has used it on several occasions in this country (*e.g.* St. Matthew, Westminster). The stop is sometimes bearded.

(2) In Germany the Nachthorn has occasionally been made of open pipes, resembling in tone a horny Hohlföte, or a Waldflöte of the Walker type.

(3) It was not unknown as a reed. St. Lambert, Münster (former organ).

Cordedain—4 ft.

A metal Flauto Traverso. St. Thomas, Strassburg.

Cormorne—Cromorne. See CLARINET.

Corna Musa—See MUSSETTE.

Corne Parforce—See WALDHORN.

Corne Sylvestre—See WALDHORN.

Cornet—(1) A Mixture stop, usually of V or IV ranks.

When composed of V ranks it comprised Stopped Diapason, 8 ft.; Principal, 4 ft.; Twelfth, $2\frac{2}{3}$ ft.; Fifteenth, 2 ft.; and Tierce, $1\frac{2}{3}$ ft. When of IV and III ranks respectively, the Stopped Diapason and Principal were successively omitted. Occasionally the Cornet was based on 16 ft. pitch, *e.g.*, at the Music Hall, Boston (Walcker); St. John, Schaffhausen. In England the compass usually extended to mid. C, but in Germany it was frequently carried to tenor C or bottom C. It was much used for solo work. At Cologne Cathedral and some other German churches, there survives a traditional, and not altogether ineffective custom, of using the Cornet as a solo stop to accompany the priest's voice.

Cornet Voluntaries were at one time of great popularity. They consisted of "runs and twirls for the right hand" (Hopkins). The best known are those of Stanley, Blewitt, Dupuis, Russell.

The pipes of the Cornet were of enormous scale and voiced flutey; they extended throughout their compass without breaking. The stop was often mounted on a small soundboard of its own above the other pipes, or was provided with very long feet in order (i) to economize space and facilitate tuning; (ii) to avoid sympathy and render the tone more prominent. This variety was known as **Mounted Cornet**. Very peculiar effects were often to be obtained from the Cornet. Mr. Casson once informed the author that he had heard one, without any unison rank, bearing some resemblance to a modern Orchestral Oboe. The objectionable feature of the stop was the prominent Tierce rank uncovered by any rank of higher pitch. It is a pity that the Cornet, or rather that type of stop, has fallen into disuse. In good examples sometimes to be heard in Germany the ranks combine well with each other, and, when used in combination, the *ensemble*, instead of suggesting screaming fifths and thirds, is extraordinarily bell-like in cohesion of tone. Abroad, as a

combinational stop, the Cornet is sometimes made to increase in the number of ranks in the treble. When so designed it serves to disguise the "breaks" in the other mutation work. This variety is often known as Progressio Harmonica, and sometimes as Compensation Mixture (*q.v.*). The name Cornet is now applied indiscriminately to any Mixture stop of a goodly number of ranks.

(2) Occasionally the Cornet is found as a reed, usually on the Pedal organ, and of 4 ft. or 2 ft. pitch. In such cases the tone resembles that of the Zink (*q.v.*). Also named Cornetin, Cornetto, or Cornettino. Königsberg Cathedral, 8 ft.; St. Ulrich, Magdeburg.

Echo Cornet—A Mixture stop usually enclosed in a swell box. Generally what is known as a Dulciana Mixture.

There is an excellent example of an Echo Cornet of VI ranks in the Celestial organ at Norwich Cathedral (Norman & Beard), furnishing an excellent example of what a Mixture *can* be made when due care and interest is expended thereon.

Cornet-à-Pavillon—(Fr.) Pavillon = bell. 8 ft. See CLARINET.

Cornettino—See CORNET, ZINK.

The name Cornettino has also been applied to a reedy-toned Fifteenth.

Cornetto—See CORNET, ZINK.

Cornetto di Caccia—See WALDHORN.

CORNO—(It.) Corno = Horn.

The name is occasionally used for the Horn stop.

Corno di Bassetto—See CLARINET, BASSET HORN
(Corno Basso).

Corno Dolce—8 ft.; occasionally 16 ft.

The Corno Dolce may be said to be a louder form of Flauto Dolce. It is constructed of Dolce-shaped pipes, wider at the top than at the bottom. Free Trade Hall, Manchester (Jardine); Rugby School Speech Room (Bryceson). The stop is made by Messrs. Andrews of Bradford. Sometimes, however, the Corno Dolce is shaped like the Flûte Conique, and occasionally even resembles the Waldflöte.

Corno Flute—8 ft.

(1) A reed stop, invented by Mr. William Hill. It possessed wooden tubes, and was of a quiet tone, resembling, somewhat, that of a modern Orchestral Oboe. An example still exists at St. Olave, Southwark. The stop being a reed, the selection of the name was scarcely happy. (2) A flue stop invented by Mr. Herbert Norman (Messrs. Norman & Beard). The tone, which resembles that of a Dolce or Flûte d' Amour, is extremely

beautiful and mellow in quality. In the tenor it affords a good representation of the Orchestral Horn. The languid is *inverted*, being flat at the top and bevelled away underneath (see INVERTED LANGUID, STOPS WITH). The upper lip is arched, left slightly rounded (*i.e.*, not definitely flattened into a bay-leaf), and not bevelled. A specimen in the author's possession measures, at Mid. C, $1\frac{1}{2}$ in., cut up $\frac{7}{16}$ in., on 4 in. wind. The Corno Flute is usually made of spotted metal. It forms an ideal Great organ accompanimental stop. All Saints, Notting Hill, W.

CORNO INGLESE—(It.) = Cor Anglais.

Cornopean—Corno = Horn. Pean, or Pæan = Hymn of Praise. 8 ft.

(1) A reed stop invented by Mr. William Hill. Of smaller scale and somewhat smoother tone than the Horn, it is softer and rounder than the Trumpet. The pipes are of inverted conical shape, and the tongues thick. Like all chorus reeds the Cornopean is all the better for a fairly heavy wind pressure. This class of stop was practically perfected by Willis, whose work exhibits as great an improvement on that earlier in vogue, as did the latter on that of the old English builders. A harmonic treble is absolutely essential for the best results. A smooth-toned reed of this description is more effective in the Swell than a Trumpet. (2) Formerly in Germany the name Cornopean was sometimes given to a large-scaled flue stop of horn-like tone, a variety of Cor de Nuit.

Corroborating Mixture—See COMPENSATION MIXTURE.

Coupler—(1) A mechanical device for uniting various departments or keys of the organ together.

Couplers are comprised under the following headings:—(a) Uniting two departments—Swell to Great, Swell to Pedal, etc. (b) Octave and Sub-octave Couplers, depressing the notes at intervals of an octave respectively above or below the chord held. Thus, if the chord C E G be held on the Swell organ, and the Swell Octave Coupler be drawn, the said C E G will be duplicated an octave higher. This type of coupler may further be divided into two classes:—(i) Those couplers acting on one manual only, or on the pedal, as described above. (ii) Those acting on separate manuals—Swell to Great Sub-octave, Swell to Great Octave.* *Rybova*

The Octave Coupler is sometimes named Super-octave Coupler in contradistinction to the Sub-octave Coupler. Strictly speaking this is a

* The above is the terminology usually employed. The author must, nevertheless, express his strong preference for the style: Swell Sub-octave to Great, Swell Octave to Great—as being more lucid.

misnomer, as super-octave implies 2 ft. not 4 ft. pitch. A real Super-octave Coupler, Choir Super-octave (two octaves above) to Pedal was fitted to the organ at Trinity College, Cambridge, as early as 1836, at the suggestion of Dr. Walmisley, who desired to provide for pedal melodic effects. At the same time, if Super-octave be wrong, then Sub-octave is also wrong, for it would imply unison pitch. It would be less confusing to adopt the style, Sub-unison and Super-unison, or simply "Sub" and "Super." (c) Double Touch Coupler, coming into operation only when the key is depressed beyond a certain distance. Patented in mechanical form by Stidolph, of Ipswich, in 1859, used in pneumatic form by Mr. Wedlake in 1862, and more recently in electric form by Mr. Hope-Jones (see DOUBLE TOUCH). (d) "Unison Off" Coupler. This was invented in the form of a movement giving "octaves only" by Mr. Casson, being first used by him at Omagh, Ireland (1898). The "Unison Off" Coupler has been used by Walker (St. Margaret, Westminster; York Minister), Forster & Andrews, Hunter, Keates, Compton, and possibly by other builders. It is a device for silencing unison action. With Sub-octave and Octave Couplers drawn, a given chord will sound in three pitches—sub-unison, unison and super-unison. On drawing the "Unison off" Coupler the middle of the chord is removed, and super-unison and sub-unison pitches only remain. Very curious and interesting possibilities are thus placed at the disposal of the player. The Swell Oboe 8 ft. or Gamba 8 ft. may be most effectively coupled to the Great organ Hohlflöte in *sub-unison pitch only*, or the Solo Bassoon 16 ft. and Harmonic Flute 8 ft. in *super-unison pitch only*. That the distinctive effect is at once lost if unison pitch be added, practical experiment will readily demonstrate.

In some organs, more particularly in America, the unison action is made to draw as a separate coupler. It is, however, preferable to assume the normal operation of the unison action, for the provision of a negative "unison off" action, for special use, is no constant tax on the organist's memory, as is the case with the contrary arrangement. So much for the different varieties of couplers. In 1881 Mr. Casson introduced the practice of grouping all couplers as stops of the division, the power or the resources of which they augment. Thus the Great to Pedal will be grouped with the Pedal organ, the Swell to Great with the Great organ, the Swell Octave Coupler and the Swell "Unison off" with the Swell organ, and so forth. The practice has since been adopted by several other builders, notably by the late Mr. Henry Willis at St. Paul's Cathedral (1901). (See also OCTAVE COUPLER).

(2) For "Coupler," in the sense of Coupling Flute, see COPPEL.

Coupling Flute—See COPPEL.

Courcellina—8 ft. See BELL DIAPASON.

Courtel—Courtal; Courtand. (Fr.) Court = short, Courtand = thick-set.

The instrument was a short Bassoon. Courtel was an ancient name for Bassoon. “I knew him by his hoarse voice, which sounded like the lowest note of a double courtel.”—(Tom Brown, Works, ed. 1760, ii., 182). The Courtel was one of the stops which Harris challenged Smith to make within a certain specified time for the Temple organ. The name has been used by Mr. Casson.

Cremona—See CLARINET.

CUBE—See PYRAMIDON.

Cuckoo—Cuculus, Cukuk, Gukuk, Cuckguck.

An arrangement whereby the cuckoo was imitated by pipes speaking an interval between a major and a minor third apart. An example is still extant at the Monastic Church, Weingarten (Gabler, 1750), though when the author heard this instrument the Cuckoo was “on strike.” St. Catherine, Magdeburg; Sondershausen; St. Gotthard, Hildesheim.

Cuspida—See FLAUTA CUSPIDA.

Cylinderquint—A Quint or Twelfth with pipes of cylindrical shape, as opposed to the tapering Gemshorn pattern, formerly so fashionable in Germany.

Cymbal—Cimbale, Cymbel.

Possibly owing to its brilliant effect the stop derives its name from the orchestral Cymbals. (Gr.) *κυμβός* = a cavity or hollow vessel. From an imitation of the sound of striking a hollow object. Cf. (Gr.) *κούτεω* = to clank, akin to (Lat.) *Campana* = bell. Practically identical with Sharp Mixture, or Furniture. Occasionally real cymbals were introduced into the organ, e.g. Cymbelpauke (Cymbals and Drum) at St. Catherine, Danzig.

Cymbalstern—Cimbalstern, Étoile Sonore, Vox Stellarum. (Ger.) Stern; (Fr.) Étoile; (Lat.) Stella = star. (Fr.) Sonore = sonorous; (Lat.) Vox = voice.

The Cymbalstern was a very favourite accessory of mediæval continental organ builders. It consisted of a star-shaped metal case representing the star which guided the Magi to the cradle of the Messiah. To it were attached—either inside or outside—little bells, which jingled when the star was caused to rotate. A few examples are still extant, e.g., that at the Monastic Church, Weingarten (Gabler, 1750). Other examples occurred at Walterhausen, and St. Michael, St. Katherine, St. Jacobi, St. Nicholas, Hamburg.

Czakanflöte—8 ft. Practically identical with Portunal. St. Marienkirche, Lubeck.

The Czakan or Stockflöte (obsolete) was a variety of Flageolet of Bohemian origin.

D.

Decima—(Lat.) = tenth. Great Tierce, $3\frac{1}{2}$ ft.

Decima Nona—(Lat.) = nineteenth. Larigot, $1\frac{1}{3}$ ft.

Decima Quinta—(Lat.) = fifteenth. Super-octave, 2 ft. On the Pedal organ, an octave lower.

Decupla—(Lat.) **Decima** = tenth, **Plicare** = to fold : = tenfold. **Decima** or **Tierce**.

Diapason—From the Greek $\eta \delta\alpha \pi\alpha\sigma\omega\nu$, an abbreviation of the phrase $\eta \delta\alpha \pi\alpha\sigma\omega\nu \chi\omega\rho\delta\omega\nu \sigma\mu\varphi\omega\nu\lambda$ = a concord through all the tones—*i.e.*, a concord of the two tones obtained by passing through all the tones (Century Dictionary). 32 ft.; 16 ft.; 8 ft.; 4 ft.; 2 ft.; and Mutation. The word is taken as a standard of pitch (Diapason Normal). The stop is the standard of the organ, its tone the typical organ tone. See also **BELL DIAPASON**, **DOUBLE DIAPASON**, **FIFTEENTH**, **MAJOR BASS**, **MIXTURE**, **OCTAVE**, **PRINCIPAL**, **SUPER-OCTAVE**. We shall here confine our remarks to the 8 ft. variety. (Ger.) **Principal**; (Fr.) **Montre**, or colloquially **Flûte de Huit**.

(1) Unlike other tone qualities Diapason tone is peculiar to the organ, finding no counterpart in the orchestra. The Diapasons constitute the backbone of the organ, holding the balance between Flutes, strings and combinational reeds. Proportionately, therefore, as the Diapasons of an organ depart from this distinctive position, so does the general *ensemble* suffer. If the stop be flutey, the organ lacks life and vigour, and the strings and reeds stand aloof; if, on the other hand, the tone be stringy, depth and dignity are sacrificed to brilliancy. *In medio tutissimus ibis*. Thus, attempts to render Diapason tone sensational or imitative are necessarily futile—it ceases to be Diapason as that word is understood by judges of tone. The author would by no means wish to imply that there is but one pattern stop worthy of the name of Diapason. There are Diapasons of various types, just as there are varieties of Gambas and Flutes. One writer, it is true, in a pamphlet issued a few years ago, advanced one hard and fast set collection of measurements, one stereotyped alloy of metal, as alone productive of true Diapason tone suitable to a fair-sized church, endeavouring to justify this ukase as being determined by an Art rule. The difficulty is, rather, to believe that anybody claiming the name of artist could possibly advance such a proposal. Diapason tone is not, and let us trust, never will be, the arbitrary standard determined by one brain. We hear much nowadays of standardization—it were as well to attempt to standardize cookery as organ tone. *Quot homines tot sententiae*. But taste must be ordinate, and there are broad limits, outside of which, in the

judgment of competent tone critics who have studied the most representative types, true Diapason tone is lost and merged into Flute or string tone—limits, howbeit, defined by no arbitrary line of demarcation. It is within these bounds that the author will endeavour to justify his own particular preference.

(2) The pipes of the Diapason are of metal—the heavier and thicker the better—cylindrical in shape, of large scale, and copiously winded. The wind pressure on which the stop is voiced varies considerably according to circumstances; it is usually from 3 in. to 4 in. It is possible to voice the stop on a fairly heavy wind pressure, the bore remaining small, but as 8 in. or 9 in. is exceeded, it is difficult to avoid windiness if the tone is to be kept sufficiently subdued for normal use. The bore, in fact, becomes so attenuated that the rapid inrush of wind is apt to give rise to windy and whistling sounds. There is, however, a Diapason on the Solo organ at St. John the Divine, Kennington (Walker), speaking on actually 15 in. wind. It is sometimes convenient to plant a Diapason on the same soundboard as heavy pressure reeds, and a capable voicer can do so within the limits specified above, absolutely and entirely disguising the employment of heavy pressure from the listener. The early English builders, with their small scales and light wind pressures, often succeeded in producing stops of beautiful quality, mellow, sweet and *cantabile* to a degree—stops admirably adapted to the musical requirements of the age, but now, as Great organ primary Diapasons, totally inadequate in point of power.* It is sometimes asserted that the production of this class of tone is a lost art, that modern voicers cannot equal, much less excel, the work of such geniuses as Smith, Harris, Snetzler and Green. It cannot too definitely be pointed out that any such statements are absolutely at variance with the facts. Modern artists, with the increased resources science had placed at their disposal, can voice delicate Gedackts and Dulcianas of exquisite quality—and, further, can preserve the same degree of perfection throughout the whole compass, an attainment which even their most zealous devotees can scarcely with any semblance of verity claim for the old school of builders.

In like manner, did they so desire, modern voicers could faithfully reproduce the old style of Diapason. In truth, much of the work of the late Mr. Thynne, whose ideals in some respects centred round



Diapason.

* See the author's "Tonal Design in Modern Organ Building," pp. 18, 19, 22 and 23

the work of the old builders, provides a striking exemplification of the validity of this contention. But the fact is, not only the musical requirements of the age but also some of the fundamental principles of organ building have since changed, and modern voicers have no desire to embrace Father Smith as their sole tonal exemplar. Diapasons of the old style, though in a sense pervading, are but slightly more powerful than Dulcianas; they are pre-eminently adapted to a certain type of unenclosed Choir organ, but, as has already been observed, when required to do duty as Great organ primary Diapasons they do not adequately satisfy the practical requirements of the present age. A certain old-fashioned delicacy of tone has indeed to be sacrificed (though it is preserved in registers more fitted to display it), but in its stead we are enabled to command a breadth and sonority infinitely more dignified, grand and soul-stirring.*

* An absurd superstition, which seemingly dies hard, is that the tone of organs improves with age. Few responsible persons, I suppose, will attempt to maintain this, so far as reed tone is concerned. As regards flue pipes, it is known that alloys containing a large proportion of tin undergo, within a short period after casting, a certain amount of change as regards malleability. Practically considered, though it is just possible that some slight change of tone may occur within the first few months after the pipe is made—whilst, so to speak, it is settling down—there is absolutely no ground whatever for supposing that subsequent to that period any internal process of change takes place. There is, on the other hand, every evidence for that fact that constant tuning, extending, maybe, over a period of some years, must, and *does* lead to considerable deterioration in the tone of the pipe. It is also known that alloys rich in tin exhibit a certain amount of resiliency, and that those containing a large proportion of lead are possessed of slightly viscous properties, and are therefore apt, with the lapse of time, to sink down under their own weight. It is quite evident that if these characteristics are at all worthy of consideration they merely conspire to upset the mouth adjustment of the pipe, and thereby to impair the tone.

Another similar assertion, sometimes ventured, is that owing to the introduction of heavier wind pressures pipes no longer mellow with age as in days of yore. The fact is that the mellowness of the tone which is conspicuous in much of the work of Father Smith, for instance, *was there from the very start*. In his days, competition seems to have turned more on the question of merit than of cash; folks were more leisurely, and were not addicted to the hurry and bustle of modern commercial life. We catch one glimpse of the Utopian conditions under which he was enabled to labour in Dr. Burney's traditional statement, grossly exaggerated as it certainly is, that Smith refused to work with wood which had the least knot or flaw in it. Smith, Snetzler, and Green, were the Willis's and Hills of the day; there were assuredly "jerry-builders" in olden time just as now.

The principle that "the old is better than the new" may doubtless hold valid so far as articles like wine and furniture are concerned, but in the case of organs mere antiquity is, in itself, no guarantee of value, but rather the reverse: for in ninety-nine cases out of a hundred the antiquity of an organ is merely an estimate of its utter worthlessness for practical purposes. Even in the case of the famous old English builders, the defence, under its best complexion, virtually amounts to this:—that given such an

(3) If, then, the organ is to maintain that massive dignity and grandeur which has won for it the title of "King of Instruments," Diapason tone must predominate. One of the main problems of the present day is that of ensuring this predominance without, on the one hand, the production of coarse, overblown tone, and, on the other, undue tonal duplication. It may be said at the outset that many tonal schemes comprise a Mixture or a Vox Humana, and yet but one Diapason, of disproportionate magnitude, where two stops are undoubtedly demanded. Organ tone cannot satisfactorily be built up by the mere conglomeration of a few powerful stops of extreme tone; the full organ should build up, in the true sense of the term, from the softest combinations. On the other hand, the organ designer cannot proceed to duplicate stop after stop, heedless alike of the increased expenditure of material and space involved, as of the liability to that fatal phenomenon known as "sympathy." How then is to be secured, without deterioration of quality, maximum efficiency at the minimum outlay? We may best seek the solution of this problem by reviewing the various types of Diapason. We have in the work of William Hill the legitimate development of the Snetzler Diapason, a ringing and full tone, though perhaps somewhat disposed towards stringiness. Following on this we notice the fine stops of John Gray and the early Willis Diapason. About this time the desire for increased volume of tone became widespread, finding its expression in rough Horn Diapasons, Harmonic Diapasons and similar barbarities on the Great organ—the increase of noise rather than

organ we may reasonably suppose that certain portions of the compass of certain of the stops were once perhaps as good as the work of a clever modern voicer would be: but there are always strong *a priori* grounds for concluding that the tone of the metal stops, at least, has been hopelessly ruined by constant tuning, and by the ravages of time. The very worst Dulciana I ever heard, was one of Snetzler's in an organ at a York church. Yet there were numbers of people who, on learning the origin of the stop, forthwith acclaimed it as one of unsurpassed beauty. I have ventured to enter at length into this subject, because of the inestimable harm this antique organ "bogey" has done to the cause of the advancement of modern organ building. I yield to no one in my respect for Snetzler organs, as the life-work of a great artist to whom the art of organ building is largely indebted; but their proper home is the museum, not the church. It is, of course, easy to enlist sympathy by raising the cuckoo-cry of vandalism in this connection; but, unfortunately, the said "bogey" is largely responsible for a most ridiculous state of affairs, viz., that the authorities of any church, which happens to possess an organ more than thirty years old, are strangely led to imagine that the pipes have become vastly mellowed by age and must on no account be discarded, or interfered with, when a new instrument is ordered. There is, normally, no more sense in asking an organ builder to rebuild an old organ, or incorporate part of it in a new one, than there would be in asking one's tailor to patch up a pair of early Victorian breeches and to include them in a new suit. It is not denied that economy sometimes demands the use of old material, but the system is ordinarily very unsatisfactory and very much overdone, and English organs would be the better for less tinkering and rebuilding.—J. I. W.

foundation. Then, with things at a very low ebb, follows the Schulze *renaissance*: the German Schulze at Doncaster, with his quiet and full, though to our ears, strangely inadequate, Diapasons, the Anglo-German Schulze at Armley and Hindley, culminating in the magnificent flood of tone at Tyne Dock. Schulze employed a very wide, low mouth, and a large bore admitting a copious supply of wind at moderate pressure. In the tenor the result is a tone of great magnificence and splendour, powerful and weighty; but in the treble the tone is thin and reedy, absolutely disproportionate in power to the tenor. In fact, the tone in the treble is that of a Principal, not of a Diapason at all. The impetus Schulze imparted to the English organ building industry resulted in a marked improvement in the work of some of the provincial firms. Messrs. Kirtland & Jardine and Messrs. Forster & Andrews (e.g., at All Saints', North Street, York) adopted the wide-mouthed Diapason. Basing his work on Schulze's methods, Mr. T. C. Lewis, of London, also attained considerable renown for artistic organ tone. In our own time some good Diapasons of the Schulze type have been voiced by Messrs. Vincent, Harrison & Harrison, Binns, and other builders. The writer heard several pipes of a stop now in the organ at New College Chapel, Hampstead (inserted to the order of the present talented organist, Mr. L. K. Boseley), voiced by Mr. Vincent side by side with Schulze's in the Tyne Dock organ, till they were indistinguishable therefrom. Alas! Imitation is oft but poor flattery. The Schulze style of voicing has also led to some very poor productions, lacking the splendour but retaining the less desirable attributes of Schulze's work—stops characterised mainly by a harsh, grinding quality, hard and strident in tone, devoid of dignity, ineffective in combination and wearisome to the ear. Having been surfeited with empty string tone, the pendulum of opinion swung to the opposite extreme. The reaction culminated in the use of huge scales and very high-cut mouths—undesirable features, both of them. Sensation-mongering in Diapason, of all tones, is, for the reason enunciated at the commencement of this article, the sure path to the utter debasement and prostitution of organ tone, true and proper. The true solution of the question lies, of course, in the *via media*. Each of the two extremes embodies the result of a striving after dignity and solidity of tone, "big" tone as it is sometimes expressively styled, an ideal, sound in itself, but in these instances imperfectly realised.

(4) The past few years have witnessed in this country a wide-spread revolution in the tonal department of organ building. One basic attribute of this change was clearly apprehended by a friend of the author's, Mr. R. P. Elliot, an American organ builder and a keen judge of tone, who recently, after having visited the most important instruments in this country, delivered himself of the following apposite comments: "I was glad to observe a strong tendency away from the coarse tone, that had

seemed inseparable from powerful organs, towards refinement; and by refinement I do not mean weakness, but purity."* Precisely the same tendency is to be observed in the realms of choir-boy voice production. It is a fact patent to all that the head tone of a boy's voice far excels in purity and pervading character the old fashioned reedy chest tone.†

The work of Schulze certainly displays wonderful characteristics for its period.‡ One cannot help the feeling, nevertheless, that there was much in it justifying the reactionary movement above-noticed. One can admire the weight and glowing splendour of the tenor portion of his large Diapasons, and yet recognise the need of greater purity and refinement of tone in the treble. There is, of course, no especial difficulty connected with the attainment of weight and solidity in the lower portions of a Diapason, it is when the treble octaves are reached that the tone is too often apt to become unduly weak, hard or shrill. In the case of instruments of moderate dimensions particularly, it would seem most inadvisable to base the flue-work entirely on Schulze lines.

The law of the Binary or Duality in Nature extends even to organ tone. "As above, so below," runs the Hermetic Axiom. One extreme is only to be realised at the sacrifice of another. So, tautologically, abnormal brilliancy (due to ample harmonic development) can be secured only at the expense of foundation tone. Tonal experts, familiar with the massive church roll of the most esteemed modern type of Diapason (described later), will instantly discern in the *ensemble* of instruments having their flue-work based on the somewhat stringy and "pyrotechnical" Schulze lines a lack of breadth and volume, and often a degree of hardness of tone, by comparison highly unsatisfactory to the ear. To revert entirely to Schulze methods in the treatment of Diapason flue-work, because, forsooth, some of the earlier examples of the reactionary period were, by exaggerated treatment, rendered dull and insipid in tone, is essentially a retrograde policy.

* See "The Church Economist," New York. Issue of March, 1904. An article on twenty-seven Cathedral organs in Great Britain.

† The value of such stops as Harmonic Flutes and clear-toned Gedeckts, and the general influence of the organ stops employed, is not sufficiently recognised in the cultivation of boy's voices; reedy trebles, for instance, are apt to induce chest tone, and certainly tend to offer serious impediment to the production of pure head tone.

‡ There is no valid reason for suppressing the fact—indeed, it is but just to point out, that there is in this country a widespread tendency to assign to Schulze undue credit for many apparently novel features displayed in his work, features in reality not so much his as common to the German school of organ building of which he was a representative. To adduce one concrete instance, the author has seen contemporaneous work by Eberhard Friedrich Walcker, of Ludwigsburg, embodying Diapasons similar to those of Schulze and other features here, at that time, esteemed a novelty. In the *Schulze renaissance*, then, we may discern not merely the influence of one single individual, albeit he a genius, but rather that of a vast national school, whose traditions were his birthright, the fruit of whose labours his heritage.

It is merely balancing one extreme against the other. A full-scaled Schulze Diapason may indeed dominate an organ otherwise weak in flue-work, but it certainly does not blend, nor weld the tone together, like the newer type of stop. Such a stop certainly might advantageously be included in a large organ already provided with at least one Diapason of the modern variety, less "free" in tone and more powerful, full and refined in the treble. Nor, indeed, is there anything to hinder the making of the newer type of Diapason with wide mouths, should extraordinary volume of tone be rendered desirable. It cannot be too strongly insisted upon, that this desire for abnormal brilliancy in Diapason work is essentially pernicious in its effect. By all means let there be added stops of duly subordinate tone calculated to impart brilliancy and splendour to the organ—and better then by the medium of the internal foundation work of the organ than by the employment of external Mixture work—but *only* when the true function of the Diapason has first been apprehended and provided for. Those who crave for brilliancy *comme que coûte* will better be able to gratify their predilections on the roundabouts, than by listening to church organs. (See also TIBIA).

(5) As regards the scaling of Diapasons it is important to observe that the bass of the organ is not to be found in the lowest octave on the manual, but in the Pedal organ. There is no need, therefore, for any abnormal treatment in the bass. It is the "playable" portion of the stop (as it is sometimes expressed), *viz.*, the tenor and middle portions of the compass which bear the nucleus of the chords, that demands the greater development. Diapasons, of all stops, require to be judged in full chords rather than in single notes, in order to display their weight of tone and the proportionate balance of the several portions of the compass.

Schulze considered $6\frac{1}{2}$ in. at CC the extreme limit for a large building, and, although in many respects his work and ideals have been surpassed, his condemnation of huge basses would seem valid at the present day. Yet CC, 7 in., is constantly to be found in quite small buildings, and the author can recall the case of a stop measuring actually $8\frac{1}{2}$ in. at CC, yet diminishing so rapidly that the bass almost entirely eclipses the middle portion of the compass, and the treble becomes sharp and thin. This latter quality of tone, arising from the use of disproportionately small-scaled trebles, appears to have been especially characteristic of the work of Renatus Harris. The treble, indeed, is the least satisfactory point of all the old English builders, and it was not until modern English builders adopted the scientific system of scaling inaugurated by Töpfer, in preference to the traditional empirical "rule of thumb" methods, that purity and proportionate balance of tone were secured for this portion of the compass.

(6) Yet another detail requiring consideration is the height to which the

mouths of Diapason pipes should be cut up. Waiving the altogether distinct question of the carrying power of pure Flute tone, it will be found that nothing is more detrimental to that of Diapason tone than "carving up," as it has expressively—the more so because innocently—been dubbed. The practice in question simply entails the elimination of the natural overtones, upon the normal development of which depends almost entirely the ring and carrying power of Diapason and analogous tones. Nothing could be more fatal. "Tuning slots," on the other hand, in the case of foundation work, *i.e.*, pipes of no very attenuated scale—unless indeed very wide or well within the distance of one diameter from the top of the pipe (in which cases the effects are more or less neutralized), have the effect of considerably weakening the ground tone. Their use gives rise to the production of a hard and horny quality, displayed in the Diapasons of Cavaillé-Coll (who slotted all open metal pipes in the organ, Mixtures included), and other French builders, and in many of those of Willis. Certainly, as has been claimed, the practice facilitates "blend" (of a sort), but for the simple reason that it largely removes the obstreperous foundation tone. Most people prefer dignity and foundation in organ tone. Another result of "carving up," when hard blowing and big-scaled basses are resorted to, is a particularly distracting boisterous and blustering quality of tone, the windiness of stops so treated being in many cases perceptible at some distance from the organ. Now, it has unreservedly been admitted that there are certain higher dissonant harmonics, which, however desirable they may be in the Gamba, are inimical to the production of true Diapason tone, and are responsible for the hard, stringy quality so frequently encountered. Such harmonics are encouraged by low thin lips, and the usual method of eliminating them is the process of cutting up, a process which, unfortunately, conjointly entails the absence of any just proportion of the lower harmonics. It is the octave, twelfth, etc., which impart to the tone vigour, firmness and definition, constituting what is sometimes termed "the true Diapason ring." Some builders, perspicaciously recognizing the importance of these lower harmonics, find themselves constrained to adopt low mouths with their attendant disadvantages. The problem of preserving the lower partials, without causing corresponding accentuation of the higher, may successfully be solved, without any undue "cutting up," by the employment of a thick smooth lip. We have here one of the most important processes of modern voicing. The thick lip is productive of a quality of tone both full and weighty, and refined and smooth, extraordinarily effective in combination, and, though possessed of great carrying power, yet in no sense wearisome.* It affords precisely the same full

* This is, of course, when properly treated. It is possible to exaggerate weight in organ tone just as much as brilliancy.

pervading tone which is so characteristic of the Diapasons of Father Smith, yet in far greater volume.

Yet another attribute of Diapasons so treated, which renders them especially valuable in small buildings, is their *fricile* speech, entirely free from that "spit" which is so often objectionably prominent in Diapasons of the old style at close quarters. In such buildings they also impart quite a "cathedral" roll to the tone. It would be possible to employ a very thick metal lip with a burnished instead of bevelled edge, but in actual practice it is found more satisfactory and convenient to cover a burnished lip of fair thickness with a strip of leather. The leather is passed round the lip, a short distance up the pipe on each side, being rendered adhesive by liquid fish glue or "Seccotine." Provided the metal be roughened with a file, the leather may be attached with ordinary glue, but as the latter is apt to crack with age, this method is best avoided. It is, perhaps, well to note that the softness of the leather affects the tone in no appreciable manner; it is the thickness of the lip which is the important factor. Hohlfslutes, and other open wooden Flutes, are sometimes made with thick lips covered with very thin leather or cartridge paper to impart smoothness and finish. Mr. Ernest Skinner, an eminent American organ builder, likens the discovery of the leathered lip to the invention by Barker of the Pneumatic Lever, predicting that it will revolutionize organ tone as surely and completely as did the latter organ mechanism. An estimate which is by no means so exaggerated as might be supposed. The leathered Diapason, indeed, is now attaining a zenith of popularity both in England and America. A prominent German builder also, who on the author's recommendation made trial of it, was so struck with the refined quality of tone that he forthwith signified his intention of adopting the process. A few isolated and unsuccessful experimental attempts at improving the tone of the pipes by coating their lip with paper, parchment, felt, and kindred substances, have been recorded, but undoubtedly the credit of having been the first to perceive the value and inner significance of the process must be accorded to Mr. Robert Hope-Jones. It was only at the cost of considerable thought and labour that he was able to develop his crude and embryonic scientific theory into a process which bids fair to transform modern organ building. The names of Cavaillé-Coll and George Willis, and of Hope-Jones, will be handed down to posterity as the authors of the most valuable improvements in the

Leathered
Diapason
(Diapason
Phonon)
showing
leathered
lip.



domains of reed-voicing and flue-voicing, respectively, which have been witnessed in the present era of organ building.

(7) It is a cardinal principle of modern organ designing that as much variety should be introduced between stops of near relation to each other as is consistent with good tonal blend.* The primary application of this principle demands the complete differentiation of the several Diapasons which may occur on the Great organ; its secondary application that some distinction be enforced between the Great, Swell, and Choir Diapasons. In designing an organ with four Diapasons on the Great organ it would be sheer waste of good material to make all these Diapasons of similar quality. Not only is "sympathy" at once encouraged, but, also, golden opportunities in the way of effective contrast, and in scientifically moulding the character of the general *ensemble*, are senselessly ignored. It is no exaggeration to state that, in the above instance, quite one-third of the volume of tone would be lost by the wearisome iteration of tone colour. As in painting, so in organ tone, the most effective results are those of contrast. The first Diapason, then, might be of large scale and powerful tone, leathered; the second, of the large Schulze type; the third, of medium scale and power, leathered;† the fourth, of the quiet *cantabile* Hill or Green type (see also GAMBA). Such a combination with a Flute of the Tibia family would produce an immense volume of dignified church tone, which would pervade every nook and cranny of the largest building. It is, of course, essential to the avoidance of "sympathy," to scale the various Diapasons differently, and to separate them from each other on the soundboard.

(8) On the Swell, the ordinary Diapason is, perhaps, a source of as much trouble as any stop in the organ. It is apt to develop into a kind of horny Dulciana, of objectionable quality, and its tone is considerably impeded by the proximity of the swell box sides. For these reasons, to the detriment of the Swell in general, the flue foundation has suffered greatly by the substitution of a Geigen, or some such stop. The full-toned leathered Diapason is the most effective foundation stop possible in the Swell. It is particularly susceptible to the *crescendo*; on opening the shutters an immense flood of pure mellow tone is liberated, tone which, in combination, does much to relieve the effect of monotony resulting from undue prominence of reed tone in the Swell—Swell "sausage-frying" as the cynics name it. There is a magnificent example on 10 in. wind in the Swell at Burton-on-Trent Parish Church (Norman & Beard and Hope-Jones). With the *louvers* closed, the writer was forcibly

* See "Tonal Design in Modern Organ Building," pp. 11 and 12, for the elaboration of this point.

† There are, of course, various types of leathered Diapason, just as of unleathered.

reminded of the singing tone of the old English Diapasons. It may, indeed, truthfully be claimed that the leathered Diapason has rehabilitated the Swell organ flue-work. The Swell organ was never, so to speak, an independent or self-contained invention. It was merely the old Echo organ rendered expressive, and its tonal scheme evolved tardily until Cavaillé-Coll and Willis suddenly transformed it with their improved reed-work. The significance of this will be apparent when it is realised that the flue-work remained practically echo-work, the reeds, with all the disadvantage above-noted, becoming the fundamental basis of the Swell organ. It was not until Mr. Hope-Jones came forward with his Diapason Phonon and Tibia Clausa that the reed-work of Willis received its complementary flue-work, and that the regeneration of the Swell organ, whereby it was once again established on an equitable basis for future development, was accomplished.

(9) The leathered lip is a most valuable means for the improvement of old pipes. As a good instance of such treatment may be cited the case of the old Byfield and Harris Diapasons on the Choir organ of Norwich Cathedral (Norman & Beard). An objectionable sort of "buzzing," caused by the straight lower lips and languids of these stops, was completely remedied by leathering their upper lips, thereby imparting the requisite "speed." The author has heard many old stops, Diapasons, Geigens and Flutes, metamorphosed merely by this simple treatment. No increased wind pressure is entailed, though such is readily adaptable without coarseness of tone ensuing.

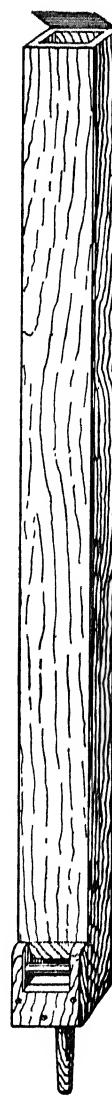
(10) Spotted metal is not favourable to the production of the best quality of Diapason tone, unless indeed of such thickness that its distinctive properties are lost. Diapason pipes require to be made most substantially. When once due thickness is assured, there would seem to be little objection on the score of durability, and certainly none from the tonal point of view, to the use of an alloy containing less tin than should be customarily employed, for pipes of merely average substance. When strict economy is not essential, it is to be desired that Diapason basses be made of thick heavy metal. Zinc, as a material for basses, bears a worse name than ever it deserves, simply from the fact that zinc pipes and the metal lips are seldom made thick enough. One famous builder, indeed, has characterized zinc as an excellent material for chimney pots, but useless for organ pipes. Although a zinc bass can never give such a full, rich and pervading tone as a very thick metal one, the use of zinc must unquestionably be permitted as a matter of economy. A really thick and well made zinc bass is quite as costly as, and probably more effective than, a metal one of the degree of thickness ordinarily adopted. The cost of metal basses of considerable substance is too prohibitive to warrant their habitual use. It will surely be admitted that the employment of a zinc Diapason bass is a more

legitimate source of economy than grooving or "ditching" an unenclosed Dulciana to a Stopped Diapason bass. On the other hand, it is quite inexcusable that organs of the first magnitude, built regardless of cost, should yet be furnished *throughout* with zinc basses. It is sometimes urged that metal basses are too viscous, and hence liable to get out of adjustment by sinking down at the foot and mouth, to be durable. Granted metal of thick substance, this contention would seem to be exaggerated; further, zinc feet can always be employed for the larger pipes without detriment to the tone. Ineffective zinc basses, or open metal basses of any kind, may often be improved by clamping a metal band firmly round the centre of the pipe, where the node occurs. Care must be taken that no rattling is caused by the band fitting badly. Sometimes even tape is successfully so utilized. It was formerly the general custom to soften zinc by subjecting it to the influence of heat. When so treated it is known as "cooked" or "baked" zinc. The process takes all the virtue out of the metal, rendering it brittle and productive of a hard "hungry" tone. The "hard-rolled zinc" process, invented *circa* 1860 by Kitsell of London, whose zinc basses are famous for their excellence, is now employed by the most reputable firms, though, unfortunately, it cannot truthfully be said that the practice of "cooking" zinc is yet obsolete.

Some voicers prefer wood to zinc as a material for Diapason basses. There is a good deal of "knack" in the successful treatment of wood basses, and it is somewhat difficult to manipulate the "meet" of the wood and metal. There are, however, excellent examples at Hindley (Schulze); St. Mark, Leeds (Binns); St. Mark, Marylebone Road, W. (Whiteley); Hucknall Torkard, Notts (Musson & Compton).

(11) The pedal Open Diapason, 16 ft., is made of either metal or wood. For large metal pipes of this pitch, all things considered, there is probably no better material than zinc. The stop is sometimes borrowed from the Great double and (erroneously perhaps) labelled Violon. When of wood, it is more properly termed Major Bass (*q.v.*). See also INVERTED LANGUID, STOPS WITH.

(12) *Scales*.—The ordinary "commercial" Diapason scale is: CC, 6 in.; T. C, $3\frac{3}{8}$ in.; Mid. C, 2 in.; Mouth, either $\frac{1}{4}$ or $\frac{2}{3}$, cut up $\frac{1}{3}$ of width. Schulze's large Diapason at St. Mary, Tyne Dock, measures: CC, $6\frac{1}{4}$ in.; T. C, $3\frac{2}{3}$ in.; Mid. C, $2\frac{1}{4}$ in.; Tr. C, $1\frac{3}{8}$ in.; Mouth, $\frac{2}{7}$ the



Wood Diapason,
showing Roller.

circumference of the pipe. Mr. T. C. Lewis* furnishes the following measurements as those of his ideal standard Diapason pipe: Mid. C, $3\frac{3}{16}$ in. diameter; Mouth, $\frac{1}{4}$ circumference, cut up " $\frac{3}{8}$ " and " $\frac{5}{8}$ " (i.e., $\frac{15}{32}$ in.); Bore " $\frac{3}{8}$ " and " $\frac{1}{16}$ " (i.e. $\frac{7}{16}$ in.); Wind pressure, $3\frac{1}{2}$ in.; Pitch, $267\frac{1}{2}$ vibrations at 60° Fahr. The pipes, from tenor C upwards, of a Diapason of ordinary substance, weigh about 80 or 90 lbs.; those of a German Diapason (a stop which is almost invariably made of tin), about 66 lbs.; whereas those of the modern leathered Diapason, made of the heavy "special" metal, which is now being used by several builders when great depth and volume of tone is desired, weigh actually 130-150 lbs. It is not possible to obtain the true massive Diapason roll from pipes of any less weight. If an ordinary pipe be gripped round the middle whilst speaking, a strong tremor will be perceptible to the hand. A great deal of energy is being wasted by transmission through the "walls" or body of the pipe. It is only by making the pipes sufficiently stout to withstand this vibration that the requisite plenitude of tone can be secured in large Diapasons. Diapasons of this type are, of course, costly; but their effect is fully commensurate with their cost. It is not sufficiently realised that the increased wind pressures, which have come into use during the past few years, demand corresponding increase in the thickness of pipes.

Diapason Phonon—8 ft.; also 16 ft.

The name originally applied by Mr. Hope-Jones to the leathered Diapason (see DIAPASON, sections 6 and 7). The name might well be retained for this stop when in the Swell organ, constituting, as it does, such a wide departure from the ordinary Swell Diapason. The Diapason Phonon on the Great organ at Colston Hall, Bristol (Norman & Beard), is a large Diapason treated with resonators, in the form of sleeves at the top of the pipes. The stop speaks on a 10 in. wind. In U.S.A., St. Luke, Montclair, N.J., by Hope-Jones & Harrison; Park Church, Elmira, N.Y.; First Presbyterian Church, Montclair, N.J.; Lutheran Church, Lebanon, Pa.; Roman Catholic Church, Providence, R.I., by Austin Organ Co., and Hope-Jones. For illustration, see DIAPASON.

Diaocton—(Gr.) $\delta\alpha$ = through. $\delta\kappa\tau\omega$ = eight.

(1) The name given to the octave coupler by Holditch, who appears independently to have invented it, though long, of course, after its first employment in Italy, and subsequent to its introduction at St. James, Bristol, (Smith, 1819). (2) A 16 ft. pedal stop (Washington Temple, U.S.A.) = Major Bass.

Diapason, Stopped—See GEDECKT.

Diapente—(Gr.) $\delta\alpha$ = through. $\pi\acute{e}\nu\tau\epsilon$ = five. — Quint.

* "A Protest," etc., p. 5.

Diaphone—(Gr.) *διά* = through. *φωνή* = sound. The application of the etymology of this word is somewhat indefinite. 32 ft.; 16 ft.; 8 ft.

It frequently happens in organ building, when the requisite conditions are fortuitously complied with, that a pallet will commence to vibrate rapidly, and it is often within the province of an organist's or organ builder's observation that such a "fluttering pallet," or a Tremulant in a state of rapid vibration, when provided with a resonator in the form of a soundboard or wind trunk, generates tones of considerable power. The safety valves of steamboats constantly act similarly. What must have been a phenomenal instance of this is recorded by Mr. Casson to have been witnessed several years ago at St. Asaph Cathedral, when (to use his words) the pallet "set up a tremendous roar, taking the building by the scruff of the neck and shaking it as a terrier does a rat." The idea must doubtless have occurred to many builders, as it did to him, that such phenomena might systematically be adapted to tonal use. An experimental attempt at such adaptation was made in 1888 by Messrs. Blackett & Howden, of Newcastle. The bulk of the apparatus employed was enclosed in a box (15 ins. square for the 16 ft. note). Wind passed into a chamber containing a vibrator in the form of a circular disc fixed on to the loose end of a spring, and so arranged as to beat against a hole in the under side of the resonator, being regulated in pitch and intensity by a sliding bridge and set-screw.

In order to economize space the box was divided into compartments, which were further partitioned into spiral channels. The bore of the channels constantly increased and the apparatus was surmounted by a short bell. By sundry modifications of the scaling and wind pressure, and by the adjustment of the vibrating disc, it was found possible to secure several distinct varieties of tone quality and degrees of power.

The credit of first transforming such raw ideas into a practical form of apparatus, which he named the Diaphone, must, however, be ascribed to Mr. Robert Hope-Jones. In 1893-5 he invented several varieties of Diaphone, embodying the Tremulant or motor-bellows principle.* The first organ to which the new invention was applied was the magnificent instrument, built by the Hope-Jones Electric Organ Co., in Worcester Cathedral (1896), containing two Diaphones of 32 ft. and 16 ft. pitch respectively, speaking on a pressure of about 22 in. The two stops in question are of considerable power, though not very regular in tone. In the succeeding year two more Diaphones of similar construction were

* Particulars and illustrations of these were published in a series of articles in the London "Musical News," Jan. 4 to May 30, 1896.

inserted in the organ built by the same firm for the McEwan Hall, Edinburgh. The 32 ft. stop speaks through a semi-circular opening in the roof. Both mark a decided advance on the earlier examples. The

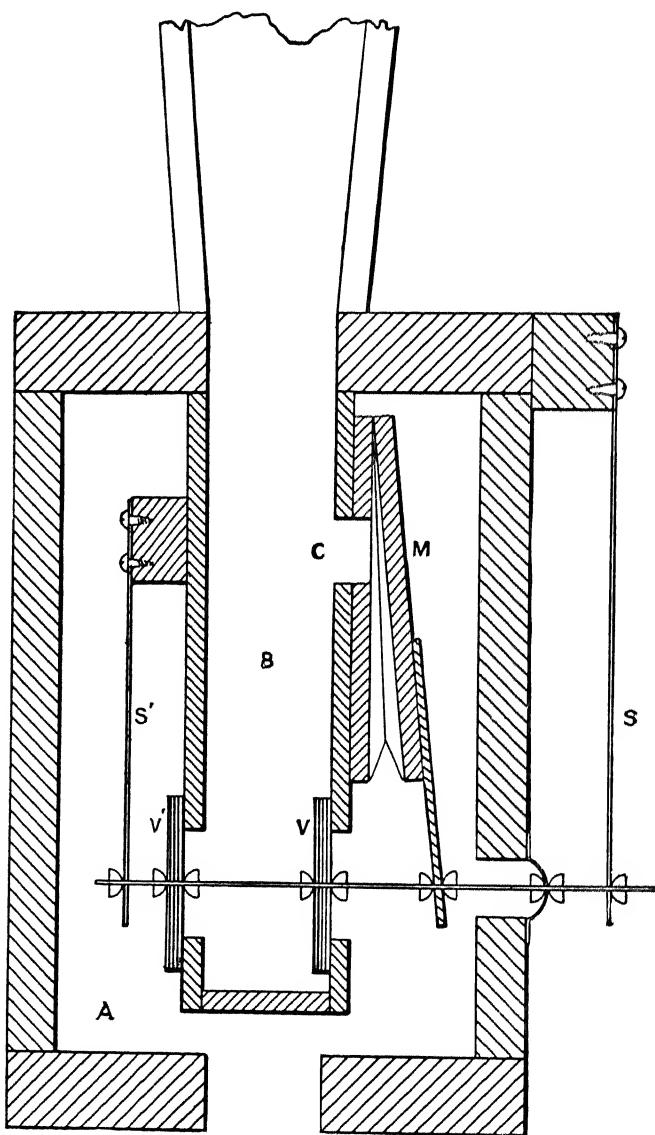


Fig. A—Bivalvular Diaphone.

above stops are all of the bivalvular type illustrated in Fig. A.

M is a motor, to the tail-piece of which is attached a rod bearing the compound and spring valves v, v', working against the springs s, s'. On the admission of wind (under pressure) to the box A, the motor M is caused to collapse, and thereby to open the valves v, v'. Wind then rushes into the chamber B, and, entering the interior of motor M through the passage c, equalizes the pressure on the motor. The action of the springs now serves to close the valves v, v', and to open out the motor M, whereupon the process is repeated.

Fig B illustrates a simpler, in fact the original, form of Tremulant Diaphone. No examples have actually been used in organs in this country, but this particular form of Diaphone is very successfully used by Voit of Durlach, Germany, as the sole pedal stop (Diaphonic Bassoon) in his small compact organs. The *raison d'être* of this somewhat singular tonal disposition is to be found in the high efficiency of this stop on a low wind pressure. A specimen, speaking on a pressure of 100 mm. (4 in.) occurs at Luxembourg Church (1902, designed in 1900). The action of the Diaphone shown in Fig. B will be explained by reference to the description of Fig. A. The satisfactory working, and the tone quality, depend greatly on the adjustment of the spring s. This spring might be attached to the valve, similarly to one of the springs shown in Fig. A.

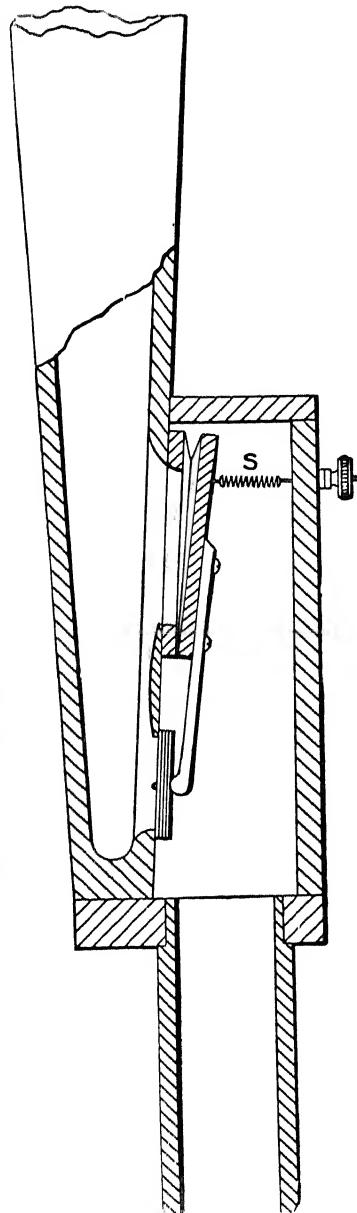


Fig. B.
Diaphonic Violone or Bassoon.

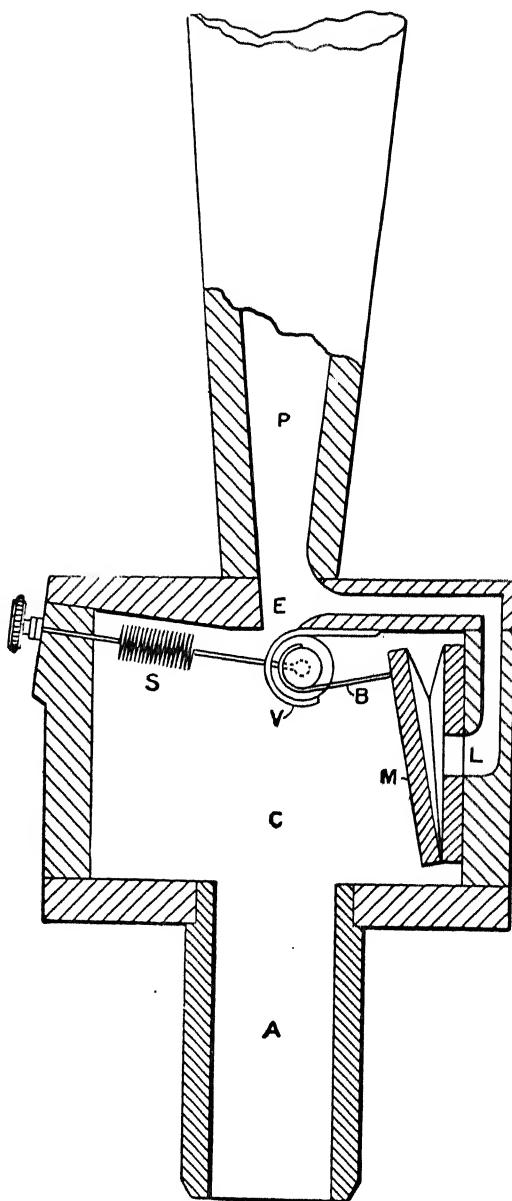


Fig. C—Roller-Valve Diaphone.

used for this purpose in bellows work, where a sudden flush of wind

A different type of Diaphone is represented by Fig. C. Its tone is said to partake of the nature of a smooth Diapason or Flute. A model was exhibited by Mr. Hope-Jones at a lecture in 1895. Wind enters at the foot A, charges the chamber C, and acts upon the back of the motor M, in such a manner that this latter is collapsed. In collapsing it moves (through the medium of the thong or flat chain B) the roller valve v, thus allowing the wind in the chamber C to escape through π into the resonator or pipe P. Wind, passing through the channel L, acts upon the inside of the motor M in such a manner that the pressure on the inside and the outside of the motor is balanced, and the spring s is at liberty to close the roller valve v again. The cyclic process is repeated. The particular function of the roller valve in organ work is to admit wind gradually. It is sometimes

is not desired. It will be seen that in this type of Diaphone the valvular movement is less sudden than that of the preceding patterns. The smoother the action of the valve, the smoother the tone quality generated. If, on the contrary, the valve beat forcibly on its seat, the resultant tone will be rough and coarse. This Roller-Valve Diaphone is here described mainly on account of its theoretical interest; it is scarcely a form adapted to practical use.

In the above Diaphones the quality and power of the tone can be controlled within limits by the shape and size of the resonators, the tension of the springs, etc. By the substitution of cylindrical resonators, Clarinet tones have been obtained. Their satisfactory tonal effect is very dependent on the suppleness of the valve. A somewhat serious objection to which all these forms of Diaphone are open is their lack of durability. It will be evident that the wear and tear of motors vibrating, in the case of high notes especially, at the requisite rapidity, must be very great. On the other hand, no single note is ever in continuous motion for a protracted period of time, and were some mechanism to be invented for computing the number of minutes in a year that a Diaphone pipe was in action, the number indicated would probably be found to be small. It is but fair to observe that the Diaphones at Worcester and Edinburgh, referred to above, although probably somewhat decayed, are still in excellent working order. Moreover, it is a matter of no very great difficulty to replace worn-out motors.

In 1897 Mr. Hope-Jones patented an improved variety of Diaphone, known as the Diaphonic Horn, or sometimes as the "valvular reed." In it the motor bellows is dispensed with, the vibrating pallet or disc being carried on the free end of a spring. It is thus a variety of beating reed. The construction of this form of Diaphone will be explained by reference to Fig. D. The spring *s* is made of aluminium, a pliable metal readily admitting the correct adjustment of the disc in relation to the block against which it beats. Whereas the Tremulant Diaphones are tuned by the resonator or pipe, the valvular reed is properly

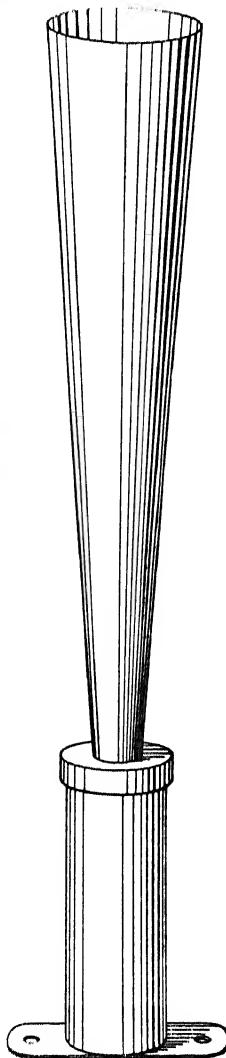
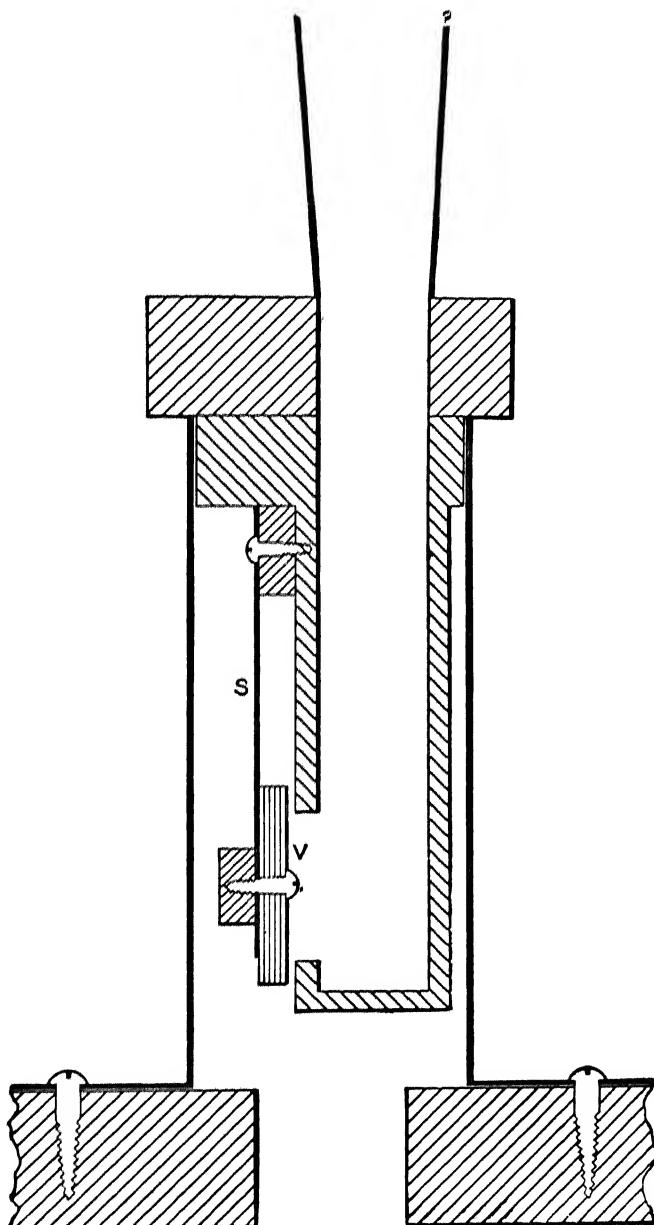


Fig. D.—"Valvular Reed"
or Diaphonic Horn

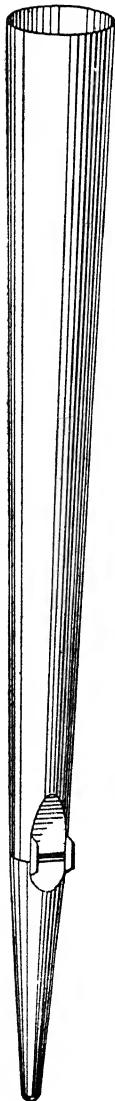
tuned by the spring and regulated at the pipe. All the Diaphones in this country, save those above mentioned, are of the valvular reed pattern. No pipe Diaphones admit of variation of wind pressure without a corresponding deflection of pitch.

A remarkably successful Diaphone (Diaphonic Horn) occurs at St. Clement, Ilford. In 16 ft. pitch it adds great dignity to the Pedal organ. On the manual in 8 ft. pitch it resembles a very powerful, full and rich Horn Diapason, beside which the Diapason, itself an excellent stop, contrasts most unfavourably. The author also heard a particularly fine example at Burton-on-Trent Parish Church, resembling, on the pedal, a powerful Trombone blended with a full-toned Diapason. On the manual in 8 ft. pitch it combined effectively with the Tuba. There are several other examples, of varying merit, dispersed throughout the country. There is also an excellent specimen on the pedal organ at Colston Hall, Bristol (Norman & Beard); it stands on 18 in. wind, and the CCC pipe measures as much as 20 in. in diameter. As a double the manual Diaphone is too weighty for the ordinary organ. In 8 ft. pitch it is at present practically useless. It cannot be carried up beyond about Mid. E, as the valves become too small and delicate; it is therefore extended in powerful flue leathered pipes. It is not a class of tone which ordinarily blends satisfactorily with the rest of the manual work, however excellent it may be as a stop for individual use, or for adding volume of tone to very large organs. As a pedal stop it would seem to present greater possibilities, imparting great richness and body to a Pedal organ already tolerably complete in tonal structure, and in any case adding considerable foundation and depth. On the other hand it boasts no particular defined tone (nor, however, does a Major Bass), and can scarcely be termed a *new* tone colour, inasmuch as it is more a combination of tones already familiar. The valvular reed requires some considerable attention and upkeep. It does not always stand well, being apt to fly off the note and produce most weird noises, and to rattle. Such defects, be it nevertheless remembered, have not yet been successfully eradicated from "close" smooth-toned Trombones. Tone resembling that of a Diaphone, though lacking, perhaps, something of the depth, can be obtained from beating reeds—witness the magnificent 32 ft. reed at York Minster (Walker), which is carried down to the lowest note in smooth round tone, wherein is clearly discernible a considerable proportion of pure foundation tone. Sceptics who expend their time and wit in seeking to determine the degree of resemblance between the use of Diaphones and of explosives in the generation of sound, would do well to note that soft Diaphonic stops are by no means an impossibility, and that, as yet, the Diaphone is in its infancy, its possibilities having been but faintly explored. On the demise of the Electric Organ Co., the Diaphone patents, together



(Section).

with some others, passed into the hands of Messrs. Norman & Beard, of Norwich. Since that time another form of Diaphone has been patented by Mr. Hope-Jones. It possesses no pipes, and consists of a piston working in a cylinder rapidly opening and closing a series of port-holes. As may be surmised, a heavy pressure of wind is essential. In U.S.A. there are Diaphones at Shamut Church, Boston, Mass. (Austin Organ Co., Hope-Jones); St. Patrick's Cathedral, New York City (Hope-Jones & Harrison).



Dolce.
(Treble Pipe.)

Diezmonovena—(Sp.) = Larigot.

Ditonus—(Gr.) δι = two, τόνος = tone.

An ancient name for the Tierce. In Greek music, the interval formed by adding together two major tones, a Pythagorean major third having the ratio 81 : 64, which is a comma greater than a true major third.

Divinare—“A stopped pipe with a beautiful (divine) tone”!!—Seidel.

Docena—(Sp.) = Twelfth.

Döfft—(Ger.) An ancient name for the Principal.

DOLCAN—Dulcan. 8 ft. ; 4 ft. See **DOLCE**.

Dolce—(It.) Dolce = Sweet. 8 ft. ; also 16 ft. ; 4ft.

(1) *Formerly*, in Germany, Dolce, and Flauto Dolce or Dolcan, were distinct stops. The former was a string-toned stop with a slightly thick or flutey quality, the latter a Flute stop with a suspicion of stringiness. Examples of the former are still occasionally to be found in Germany, made of wood, and sometimes with a double mouth. (2) *Now*, both in England and Germany, the name Dolce is employed to designate the Dolcan or Flauto Dolce. The Dolce pipes are of metal, widening in diameter as they ascend. The tone is extremely beautiful, being soft and velvety, with a touch of French Horn quality in the tenor octave. The Dolce is invaluable as an accompanimental stop on the Great or Choir organ, and might with advantage be more extensively employed in this country. One reason, perhaps, for its scarcity in English organs consists in the fact that the pipes, increasing, as above stated, in diameter at the top, occupy much sound-board space. Albeit, Dolces of exquisite quality are

made (*e.g.*, by Compton, Binns), tapering but little. Messrs. Norman & Beard's Corno Flute furnishes likewise a good illustration of this class of tone produced from cylindrical pipes. It is generally believed that the Flauto Dolce was introduced into this country by Schulze. Mr. Smith, of the well-known firm of Messrs. Abbott & Smith, of Leeds, once informed the author that a Dolce with inverted conical pipes was introduced at Chesterfield Parish Church by Snetzler. The Dolce forms an excellent 8 ft. pedal Flute in small organs, superior in effect to the ordinary Bourdon extension. As a pedal Flute it may be heard at Holy Trinity, Upper Tooting; Battersea Polytechnic (Beale & Thynne, voiced by Whiteley). At St. Katherine's Convent, Queen's Square, W., the late Mr. Thynne inserted a 16 ft. Dolce of exquisite tone. On account of limitation of space the lowest few pipes are stopped. The manner in which the "meet," or transition from open to stopped work, is manipulated, is marvellous; very gradually, as they descend in pitch, the pipes begin to lose their "bloom." Indeed some difficulty is experienced in determining the exact location of the break. Doncaster Parish Church (Schulze); St. Stephen, Wandsworth (Whiteley). Chamber Organ, Oulton Rocks, Staffs. (and several other organs by Binns); Hucknall Torkard Parish Church, Notts. (Musson & Compton); Mr. Armitage's Chamber Organ, Nottingham; Cantley Church, Doncaster; Emmanuel Church, Leicester; St. Mary, Westwood (with Frein Harmonique), (Compton). *Scales*:-A Dolce by Binns, measured at T.C, 3 in. in diameter at the top of the pipe, 2 in. at the mouth. Below this note the stop is frequently carried down in closed pipes. An example at Emmanuel Church, Leicester, by Compton, made throughout of open pipes, measured at CC 4 in. at the top, 3 in. at the mouth; at T.C, $2\frac{1}{4}$ in. at the top, $1\frac{3}{4}$ in. at the mouth. (3) The name Dolce is sometimes employed to designate a Swell Bourdon borrowed as a pedal stop. It has also been applied by Messrs. Brindley & Foster to the Swell Rohrflöte, borrowed according to that firm's "metechotic" system, as a Great organ stop (Wesleyan Church, West Leigh).

Dolciano-8 ft. Either (1) Dolce; (2) Clarabella; (3) Dulcian (reed).

DOLCISSIMO-Dulcissima. (It.) Dolcissimo; (Lat.) Dulcissima = very sweet. 16 ft.; 8 ft.

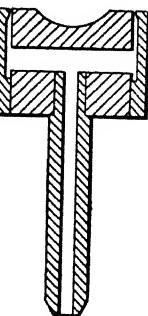
(1) Echo Dulciana (Brooklyn Tabernacle, U.S.A.); or (2) Swell Bourdon, 16 ft., borrowed as a pedal stop (*e.g.*, by Binns).

Dolzflöte--See DULZFLÖTE

Doppelflöte—Doppelgedackt, etc. (Ger.) Doppel = double Flöte = Flute. 8 ft.; also 16 ft.; 4 ft.

A wood Flute with mouths on two opposite sides of the pipe. Either open or stopped, and generally of large scale. It speaks on the normal pressure of wind. The tone is full, liquid, and weighty, but inclined to be somewhat dull and devoid of distinctive quality. Formerly the double mouth was certainly instrumental in the production of a fulness of tone more pronounced than anything which had hitherto been obtained from

single-mouthed pipes, a fulness perhaps more noticeable in combination than in individual notes. The introduction of the leathered lip has, however, rendered possible the production from single-mouthed pipes of even greater body of tone, combined, moreover, with more distinctive quality. Double-mouthed stops possess the disadvantage of requiring clear speaking room on two sides of the pipes. In England, where builders are seldom allowed sufficient room for their instruments, and fierce competition demands economy in every inch of soundboard space, this requirement has militated much against the use of stops of this class. A specimen of the Doppelflöte was included, however, in the Great organ specification in the organ for Sandhurst Cathedral, Australia (Bishop, 1905). In America also the Doppelflöte is rapidly being discarded. At Winchester Cathedral, Willis experimented with double mouths for the wood 32 ft. stop, but secured no satisfactory results. Recently, Herr Weigle, of Stuttgart, has patented a variety of Doppelflöte, named by him Seraphonflöte, with the mouths on two adjacent sides of the pipe. His patent likewise includes metal pipes, sometimes harmonic in structure, the languid and lips of which are brought



Section of
Doppelflöte.



Seraphonflöte
(Weigle).

forward to a point, so that two lip surfaces, lying at an acute angle to each other, are created. The mouths are generally bearded. There

was nothing remarkable about the tone of the specimen pipes which the author recently heard at Herr Weigle's factory; indeed the tone seemed rather to labour at a disadvantage than to be improved. In the case of a pipe in the author's possession, made by another German builder on similar principles, the tone is far from satisfactory. Instances of the Doppelflöte may be heard in this country at Central Hall, Birmingham; Lutheran Church, Whitechapel, E. (Walcker); St. Matthew, Westminster (made in Bavaria for the Rev. J. B. Croft's own West End organ); Derby Road Church, Nottingham (Conacher—a Waldflöte voiced in Germany). An extremely fine Doppelgedackt pipe in the author's possession, made by Voit of Durlach, Germany, bears the subjoined measurements: Mid. B pipe, stopped, $2\frac{1}{8}$ in. \times $1\frac{3}{8}$ in.; mouth cut up a bare $\frac{5}{8}$ in., and very much arched. The cap is set slightly *above* the block. The two sides of the pipe bearing the mouths are of hard wood, to which circumstance is probably due much of its tonal excellence.

Double—A prefix signifying sub-octave (the octave below unison) pitch. *e.g.* Double Claribel Flute, Double Dulciana, Double Trumpet. The nomenclature of Pedal organ stops, however, is frequently inaccurate. Thus, *e.g.*, Double Dulciana, Contra Fagotta, are found to be of 16 ft. pitch instead of 32 ft., and Trumpet of 8 ft. instead of 16 ft. Synonymous with "Contra."

Double Bass—See CONTRA BASSO.

Double Diapason—Manual, 16 ft.; Pedal, 32 ft.; 16 ft.
The 32 ft. pedal stop is sometimes named Great Bass or Major Bass. For "Pedal Open Diapason" 16 ft., see DIAPASON (section 11), and MAJOR BASS.

Manual—The first Double Diapason used in England was that made by Loosemore for Exeter Cathedral in 1664. The pipes of the Double Diapason are of metal, though the bass portion is very occasionally made of wood. In old organs, and in some modern ones, the name is erroneously applied to a stopped double. Howbeit, when the stop is open, the builder is generally careful to indicate the fact on the stop knob or key. There is a good anecdote, enjoying, moreover, the advantage of being well authenticated, connected with the new organ acquired by a certain church at Westminster. The old clerk, on being asked for his opinion of the new instrument, waxed most eloquent over the fact that it even contained a Double Diapason *in case the first one broke!*

Pedal—The pedal Double Diapason is made of wood or metal. Probably the biggest scaled stop ever employed was a wooden one of 4 ft., *diagonal* measurement, inserted by Hill, to Dr. Camidge's order, at York Minster, in 1832. The upper pipes of this, lengthened, form the lower pipes of the present stop. The front of the CCCC pipe

measures about 2 ft. There is a good example of a 32 ft. wood stop of small scale at the Albert Hall, Sheffield (Cavaillé-Coll). The first metal stop of 32 ft. pitch in England was inserted at York Minster (1832) by Hill. It is still in use. The CCCC pipe measures 20 in. in diameter. Metal 32 ft. pipes vary in diameter from about 14 in. to as much as 24 in. The greater number in this country have been made by Kitsell of London, the celebrated zinc worker—that metal being undoubtedly the best material for such large pipes. At St. George's Hall, Liverpool, Willis experimented with cast iron pipes fitted with wood mouths; but they were never satisfactory, and a new stop of zinc was substituted during the recent rebuild. The 32 ft. stop at the Albert Hall (Willis) is of "pure tin" (i.e., 90 per cent.) burnished. The lowest four pipes are reputed to have cost altogether £800—the price of a moderate-sized organ in itself. At Ulm Münster (Walcker, 1856), may be seen cylindrical 32 ft. pipes of wood. Formerly they stood in the case "in prospect." The open 32 ft. stop is a very great luxury, any organ possessing it being at once raised to the dignity of a cathedral instrument. A popular tonal effect at the present day is that of 32 ft. pedal alone, with distinctive manual stops such as the Céleste.

Double English Horn—16 ft.

Invented by Mr. Hope-Jones. The pipes of the Double English Horn, which are of thick heavy metal, are of inverted conical shape and are surmounted by large bells. They are of full Oboe scale. The tongues are weighted and kept as flat and close to the reed as possible. The shallots are "open" (i.e., made with parallel apertures). The result is a very fiery "free" tone, of great brilliancy and richness. Possessing as it does but little body, the tone quality may be described as a thin blare (in a musical sense). The Double English Horn is particularly remarkable for the richness it imparts in combination. It is a most effective Swell double reed. At the same time its "freedom" of tone renders it scarcely well suited to form the position (which it has sometimes occupied) of the *only* double stop in a Swell, a flue double being necessary. The stop does not resemble the Cor Anglais, and differs much in tone from the ordinary double reeds. There are good specimens at the Collegiate Church, Warwick; St. Michael, Chester Square, W.; and Worcester Cathedral; (Hope-Jones).

Double Flute—See DOPPELFLÖTE.

DOUBLE-MOUTHED PIPES—See DOPPELFLÖTE.

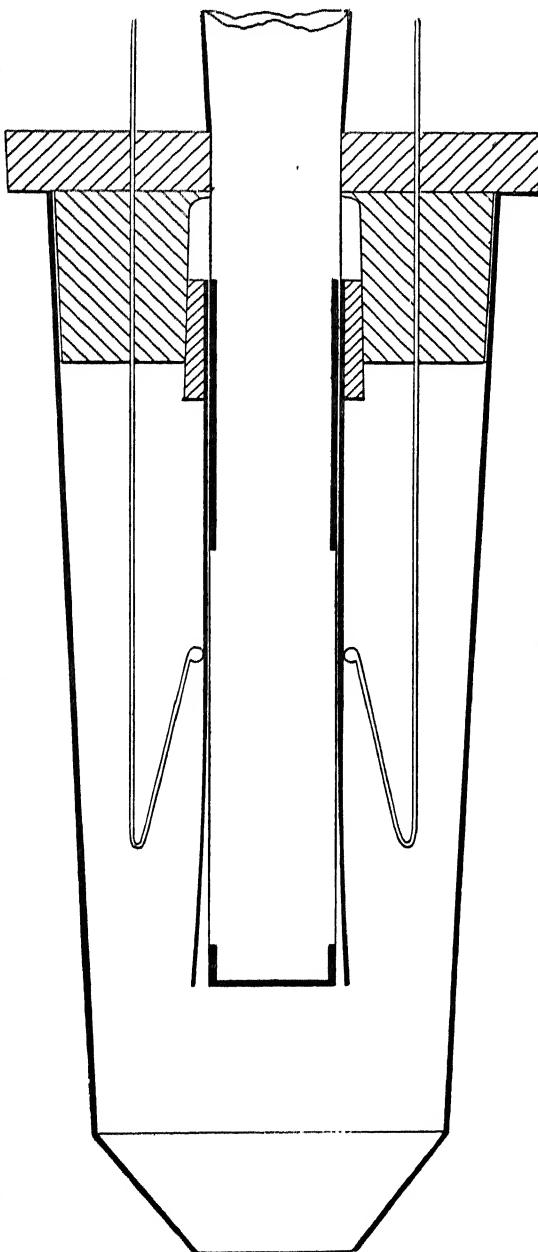
DOUBLE OBOE-HORN—See OBOE-HORN.

Double Stopped Bass—32 ft. See SUB-BOURDON.

DOUBLE - TONGUED

REED—Double-tongued organ reeds appear to have been first experimentally tried by Herr Giesecke, of Göttingen. Subsequently, however, they were practically applied by Mr. Hope-Jones for the first time at Worcester Cathedral (1896) and later at the McEwan Hall, Edinburgh. The large Tubas in these two instruments are furnished with wooden shallots (see REED), each with two tongues fixed opposite to one another. They are voiced on 20 in. pressure.

The Worcester example is of prodigious power, and very smooth, though not so refined in tone as a Willis Tuba, or as the Tuba Sonora in the same instrument. It is open to question whether the results accruing from the use of double-tongued reeds are at all commensurate with the trouble entailed in their construction and upkeep. It is, of course, true that the provision of a second vibrator does materially amplify the volume of tone.* But it



Double-tongued Reed.

* But, for scientific reasons which cannot be entered into here, not to an extent at all proportionate to the intrinsic capacity of the second vibrator. In other words, a double-tongued reed is by no means twice as powerful as a single-tongued pipe.

would seem that the maximum degree of power desirable can be obtained from heavily-blown pipes of triple speaking length (*e.g.*, St. Paul's Cathedral; Norwich Cathedral). Should the two vibrators of a double-tongued reed happen to get slightly out of tune with each other, the pipe will not, of course, simultaneously speak two notes; but it will suffer in quality.

DOUBLE TOUCH—A stop controlled by a key or knob to which this term is affixed would speak only when the second touch of a manual was brought into operation by the key being depressed, against the resistance of a stronger spring, beyond the ordinary first touch.

In the Hope-Jones organs at Worcester Cathedral and the Collegiate Church, Warwick, the stop key controlling the *Céleste* is so constructed as to respond to two movements. The initial travel of the key brings on the sharp *Céleste* rank, the completed travel (against a stronger resistance) adds the flat rank.

Double Trumpet—See **TRUMPET**.

DOUBLETTÉ—(1) 2 ft. (Fr.) = Fifteenth. (2) Mixture. (a) "Grave Mixture," 12th and 15th, or (b) a Mixture composed of 15th and 22nd.

Drum Pedal—(Ger.) *Trommel* (*q.v.*). A pedal which, when depressed, admitted wind to the two lowest pipes on the organ, whereby an effect simulating the roll of a drum was obtained.

The Drum pedal was much used abroad. It was also inserted by Father Smith at St. Nicholas, Deptford, and by Renatus Harris at Sarum Cathedral (1710). In some ancient organs the pedal moved the arms of figures in the casework, beating drums. See also **EFFECTS D' ORAGE**.

DUIFLÖT—*Doiflöt* (Dutch). See **DOPPELFLÖTE**.

Dulceon—*Prinzipal*. Presumably of soft tone.

Dulcet—4 ft.

The name has no fixed meaning. It may represent a delicate Flute or a Dolce, or as **Dulcet Principal** it may bear the same relation to Dulciana as does Salicet to Salicional. The last connotation is the most usual. The Octave Dulciana was used by Green at Rochester Cathedral and Greenwich Hospital.

Dulcian—*Dulzian*, *Dulzino*, *Dulziano*. Originally 8 ft., and very seldom 16 ft.; later also 4 ft.

A German reed stop practically identical with the Bassoon. The pipes were immaterially either open or capped. Generally a large scaled free reed, with bodies widening slightly; sometimes, however, a beating reed. Occasionally the pipes were made of wood. Mulhausen; St. John and Market Church, Hanover; St. Dominico, Prague. At Neu Ruppin (32 ft.); Frauenkirche, Görlitz; and Cemetery Church, Breslau, it was found as a flue stop. Such instances, though, are exceptional. The instrument, Dulcian, was a primitive type of Bassoon.

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Dulciana—(Lat.) Dulcis = sweet. 8 ft.; also 16 ft.; and rarely 4 ft.

The Dulciana is said to be the invention of Snetzler, and to have been introduced in his organ at King's Lynn (1754). Regarded from the point of view of the extreme purist, the tone of the stop should be that of an Echo Diapason; but, to the end that the stop may be rendered more interesting in character and less of a tonal duplication, some latitude of treatment is customarily assumed, and a certain stringy and sometimes horny character introduced, causing it to approximate in quality to the Salicional or Keraulophon, respectively. In these days of "positive" or decisive tone colours, the real Dulciana is rapidly becoming obsolete, yielding its place to the Salicional. Dissociating oneself candidly from merely antiquarian and traditional ideas, it cannot indeed be maintained that the superannuation of the colourless Dulciana is any loss at all. The real old-fashioned Dulciana may be said to be a miniature replica of a Green Diapason. As such it would barely be distinguishable, at a slight distance from the keys, from the Swell Diapason with the box nearly or entirely closed. Such tonal duplication violates one of the most important principles of modern tonal design,* and there is no valid reason why, conjointly with the traditional mellow and *cantabile* characteristics of the stop—admirable in every respect—a certain amount of colour should not be infused into the tone. The pipes of the Dulciana are of metal, cylindrical in form, of small scale, and of gentle intonation. The nicking is fine and close, and the wind consumption small. It is highly desirable that the lips of the Dulciana be sufficiently cut up in the treble to eradicate the objectionable horny or spitting quality so frequently encountered.

The **Echo Dulciana** is, of course, still quieter in tone. It is usually enclosed. There is an excellent example in the Solo box at York Minster (Walker) actually on about 8 in. wind (see TUBA). Beyond that pressure it is difficult to avoid windiness. Many voicers of repute consider it easier to get good Dulciana tone on $3\frac{1}{2}$ or 4 in. wind than on the old fashioned $2\frac{1}{2}$ in. The Dulciana, unless voiced "reedy," does not sound well when enclosed. It is also very apt to be thrown off its speech by dust. A Gamba is therefore to be preferred in the Swell organ. The Dulciana is a stop which lends itself readily to effective use with octave and sub-octave couplers. In view of this fact the 4 ft. variety is of little use. In Dulciana 16 ft. pitch it forms an excellent double for the Choir organ, whence

* See "Tonal Design in Modern Organ Building," pp. 11 and 12

it may conveniently and effectively be borrowed on to the Pedal organ. Both on manual and pedal, the **Double Dulciana** is a stop of the utmost value and beauty, forming an excellent background and bass to soft manual combinations. It is unfortunately rare in this country, since its utility is confined to combinations of no great power. There are good specimens at Warwick Collegiate Church, and McEwan Hall, Edinburgh (Hope-Jones), both partly contained in the case, to which use, it may parenthetically be observed, the pipes are well adapted on account of their slender and graceful proportions and unobtrusive tone. An Octave Dulciana by Snetzler occurred at Passau Cathedral, Germany. The first Double Dulciana appears to have been introduced by Bishop at Acre Lane, Clapham (1828). The Dulciana is essentially an English stop, almost entirely unknown on the Continent even at the present day. The scale of the Dulciana varies from $3\frac{1}{2}$ in. to $4\frac{1}{2}$ in. at CC. A splendid specimen voiced by Mr. Compton at Emmanuel Church, Nottingham, measures: CC $3\frac{1}{4}$ in., T.C $1\frac{7}{8}$ in. It is of spotted metal, and the tone is quiet and velvety.

Dulciana Mixture—Dulciana Cornet.

A Mixture stop of quiet silvery tone, though scarcely of Dulciana scaled pipes. A very great acquisition to an organ of moderate size. The Dulciana Mixture is generally enclosed in a Swell box. St. Mark, Leeds (Binns); York Minster (Walker); Echo Organ, Norwich Cathedral, VI ranks (Norman & Beard—a most effective stop). See **MIXTURE**.

Dulcimer—A string *instrument* introduced as an organ stop by Schwarbrook at St. Michael, Coventry (1733).

The Dulcimer is a trapeze-shaped instrument, on which are stretched wires which are struck by hand with a hammer.

Dulcissima—See **DOLCISSIMO**.

Dulzflöte—Dolzflöte. See **FLAUTO DULCIO**.

Duodecima—(Lat.) = Twelfth.

E.

Echo—A prefix denoting exceptional softness of tone. *e.g.*, Echo Dulciana, Echo Salicional, Echo Cornet.

When the name occurs by itself in the specifications of ancient Continental instruments, it has reference to a quiet Flute enclosed in a box and isolated from the organ. This is also sometimes called Bourdonecho.

Echo Bass—See **ECHO BOURDON**.

ECHO BOURDON—16 ft.

A quiet Bourdon. A Swell Lieblich Bordun, borrowed on to the Pedal organ, is frequently named Echo Bourdon, or Echo Bass. See **DOLCISSIMO**.

Echo Gamba—8 ft.

A quiet Gamba of hard, cold tone. Formerly a speciality of Messrs. Walker, who now, however, continue to apply the name to what is virtually a String Gamba, or Viole d' Orchestre. The Echo Gamba is almost invariably enclosed in a swell box.

Effets d' Orage—(Fr.) Effet = effect. Orage = storm.

See STORM PEDAL.

English Horn—See COR ANGLAIS, DOUBLE ENGLISH HORN.**Epistomium**—(Lat.) = a Ventil.**EUPHONE**—Euphonium, Eyphone. (Gr.) *εὖ* = good. *φωνή* = sound. 16 ft.; 8 ft.

The first instance of the Euphone was that inserted at Beauvais Cathedral in 1827-29, in company with other free reed stops named Conoclyte and Terpomele. The pipes were cylindrical in body, terminating in a long cone. The Terpomele and the Euphone were adapted to expressive use by means of a device for varying the wind pressure. Subsequently, in 1830, Sebastian Erard introduced an expressive free reed, which he named Euphone, into his organ at the Tuileries Chapel Royal. The form of pipe he adopted was that utilised by M. Grenié twenty years previously. The popular opinion that Erard was the inventor of the Euphone is therefore inaccurate. The tongues were broad and thin, and the pipes were of the Grenié pattern, shaped somewhat like a balloon with a slit near the top. When now made, which is but rarely, the pipes are of inverted conical shape. In tone the stop varies considerably. Usually it may be described as a sort of cross between a Cor Anglais, Bassoon and Clarinet. It is of gentle intonation. The Euphone was introduced into this country by Messrs. Kirkland & Jardine. St. Peter, Manchester (1856); Free Trade Hall, Manchester (1857). An example, though an imperfect specimen, existed at the

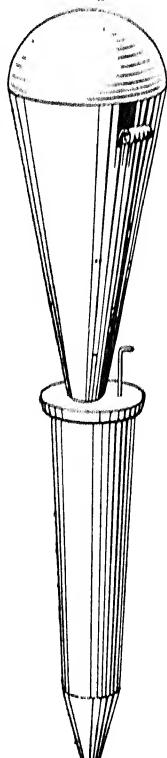


Fig. A—
Euphone.

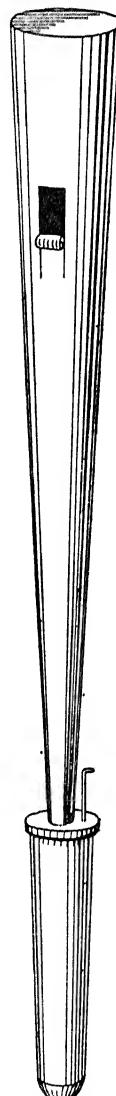


Fig. B—
Euphone.

Unitarian Church, Nottingham; but it was removed a few years ago because the authorities could tolerate the tone no longer. Other instances: St. Sulpice and St. Eustache, Paris; Zurich Cathedral.

Euphonium—See EUPHONE.

Evacuant—(Lat.) *Evacuare* = to empty. A drawstop, opening a valve which allows the bellows to exhaust.

The only example in this country is at Derby Road Chapel, Nottingham (Conacher), inserted to the order of Mr. John Rogers, F.R.M.S. The author has vivid recollections of attempting to solve the nature of the stop, which in this instance is grouped above the Swell stops. The device originated on the Continent. There was doubtless some use for it in the days when bellows were sometimes so liberally made that (as we read in Hamilton's "Catechism of the Organ") those at Seville Cathedral, when fully charged, supplied the full organ for a quarter-of-an-hour on end.

F.

Fach—(Ger.) = fold. *Mixtūr dreifach* = Mixture threefold, *i.e.*, three ranks.

FAGOTTO—See BASSOON.

Contra Fagotto—16 ft. See BASSOON.

FAN TREMOLO—A species of Tremulant used by the Austin Organ Co., U.S.A., consisting of a two-bladed fan.

The fan is suspended in a swell box over the pipes affected, and worked by four small motors, coupled in pairs by means of right-angled cranks, and actuated by the pipe wind. The effect is pleasant and musical, for the Fan Tremulant acts on the sound waves *after* production, not interfering with the speech of the pipes. The bass pipes are only just perceptibly affected. In a large organ of the ordinary type both varieties of Tremulant might well be employed—the Fan Tremulant for rapid *vibrato* effects (*e.g.*, with Vox Humana), the ordinary type, powerful and essentially slow, for other effects. There is an example in this country at the Baptist Church, Rushden, Northants (Austin Organ). The patent air-chest employed in the Austin organs affords a wind supply so absolutely steady as to be quite impervious to the action of an ordinary Tremulant.

FAN TRUMPET—Horizontal Trumpet. Also Fan Tuba, Horizontal Tuba (See also CHAMADE, TROMPETTE-À-). See the FRONTISPICE.

Tubas, or Trumpets, with pipes bent to an obtuse angle and spread out in the form of a fan. By this means the tone is caused to blare out at the audience in a manner generally savouring more of noise than of music.

Examples are very common in Spain,* where such pipes are often made of brass. The first Fan Tubas in this country were inserted at York Minster (Hill) in 1844, having been presented by Hudson, "the Railway King." They were removed in the recent rebuild (1902-3). Examples exist at All Saints, Margaret Street, W. (1858); Manchester Town Hall (Cavaillé-Coll); and (inside of the case) at Albert Hall, Sheffield (Cavaillé-Coll).

Feldflöte—Feldpfeife. (Ger.) Feld = field. Either (1) Waldflöte; (2) Schweizerpfeife.

Feldhorn—(Ger.) Feld = field. See WALDHORN.

Fern—(Ger.) = distant. Equivalent to "Echo."

Fernflöte—8 ft. See ECHO

May refer to any quiet flue stop of distant tone. Sometimes a variety of Gedackt, with a small hole in the side of the pipe near the top. At St. Mary, Tyne Dock (Schulze), a delicate Gemshorn 8 ft.

Fernhorn—A cylindrical open metal stop, of large scale but small bore, at Washington Temple, U.S.A. (Kimball Co.). It is practically an echo Cor de Nuit.

Fifre—(1) Fifteenth, 2 ft.; (2) Twenty-second, 1 ft. (Abbeville Cathedral); (3) II rank Mixture, 26th and 29th

Fifteenth—Decima quinta, Super-octave. 2 ft. (i.e., a 15th above unison).

A super-octave Diapason, bearing the same relation to Principal 4 ft. as does the latter to Diapason 8 ft. The Fifteenth adds brightness to Diapason tone. Frequently it is voiced too powerful and shrill, especially in small organs. In organs of moderate dimensions a Harmonic Piccolo is probably alike more useful and effective. The name Super-octave is sometimes applied to a full-scaled powerful Fifteenth, as is Octave to a Principal of similar construction and quality.

Fistula—(Lat.) = pipe. Fistula formerly denoted the Syrinx or Pan's pipes. (Lat.) *Fistula Minima* = smallest pipe = Flageolet. *Fistula Salicis* = willow pipe = Salicional.

Flachflöte—(Ger.) Flach = flat, or shallow. 8 ft.; 4 ft.; occasionally 2 ft.; 1 ft.

The name has its origin in the fact that the lips of the Flachflöte are very broad. The pipes are shaped as the German Spill- or Spitzflöte, the mouths being cut up high. The tone is sharp and thin. Monastic Church, Weingarten (Gabler, 1750); Haarlem (Müller, 1738).

* See the illustration of the recently rebuilt organ at Seville Cathedral in the "Zeitschrift für Instrumentenbau," Leipzig, No. 19, 1903.

Flageolet—Flautina. Formerly *FISTULA MINIMA* (*q.v.*). 2 ft.

This stop, being quieter than the Fifteenth, is well adapted to the Choir organ. The tone is sprightly and slightly flutey, though not so full as that of the Piccolo (*q.v.*), with which, however, it is frequently confounded. Occasionally found on the Continent in 1 ft. pitch (see *CAMPANA*).

Flat Twenty-first—(b 21st). Flat Seventh or Septime, sometimes less correctly name Sharp Twentieth. Manual, 1 $\frac{1}{4}$ ft.; pedal, 2 $\frac{2}{7}$ ft.; 4 $\frac{4}{7}$ ft.

A mutation stop sounding a minor seventh (tuned perfect) above the Fifteenth, though, of course, like other Mixture work subject to "breaks." The Flat Septime was introduced by Mr. Jackson, of Liverpool, by whose son it was fortuitously discovered one day in 1847, when tuning "close," at the voicing machine, the chord of C, E, G and minor 7th. He was surprised to hear, as soon as the last note became perfect, a deep note like that of a reed, an effect due, of course, to the production of a powerful resultant tone. In 1848, the Flat Septime was inserted at St. Mary, Bootle, near Liverpool, and at Whitworth Parish Church, and in 1849 on both manual and pedal at Liverpool College. This latter organ was opened by Henry Smart, who inserts a vague reference to the Flat Septime in his organ book. In the following year Dr. Hopkins gave a recital on the instrument. Dr. J. W. Hinton ("Organ Construction") attributes the probable invention of the Seventh as a Mixture rank to Dr. Gauntlett, who is reputed to have introduced it at St. Olave, Southwark; there is every reason, however, to believe that Dr. Gauntlett learnt of its use from either Dr. Hopkins or Mr. Smart. The Flat Septime has been used by Cavaille-Coll (first time at Notre Dame, Paris, in 1868, manual, 2 $\frac{2}{7}$ ft. and 1 $\frac{1}{4}$ ft., pedal, 4 $\frac{4}{7}$ ft.; and subsequently at Blackburn Parish Church, etc.); Walcker; Sauer, of Frankfurt-on-the-Oder; Ladegast, of Weissenfels (St. Nicholas, Leipzig, 1862); Casson (London Organ School; Cathcart House, South Kensington); Harrison & Harrison (Whitehaven); Compton. The effect is well described by Dr. Hopkins as "brassy." The stop should therefore be neither full-toned nor powerful. It forms a valuable ingredient in the composition of Mixtures.

FLAUT-À-BECQ—Flûte-à-bec. (Fr.) *Bec* = nose, beak. 8 ft.; 4 ft.

A Flute named after the old Flaut-à-becq, blown, not transversely as the ordinary Flute, but like a Flageolet. The stop was of no particularly distinctive tone. The pipes were sometimes conical in shape, sometimes wholly or partially stopped.

FLAUT ALLEMANDE—See **FLAUTO TRAVERSO**.

Flaut Hemiol—8 ft. A stop which, as the pitch rose, gradually varied its quality through Gamba, Salicet, Fugara and Flute. (See Hamel, Vol. III, p. 540.)

There was probably as much accident as design in this peculiarity. The difficult task in voicing modern keen Gambas on a low wind pressure is to preserve the stringy quality, combined with proportionate power in the treble. Some of the late Mr. Thynne's Violes became quite flutey in the upper octaves. The orchestral French Horn presents a remarkable instance of this transition of quality. Whereas at one time it was considered the standard of excellency to endeavour—often with the final result of ruining the stop—to preserve one quality of tone throughout the compass, now of late years a wonderful field has been opened in the skilful merging of one quality into other in different portions of the compass. Perhaps the most advanced organ in this respect—the one which suggested this point to the author—is that at Battersea Polytechnic (Beale & Thynne, voiced by Whiteley).

Flauta Armónica—(Sp.) = Harmonic Flute.

Flauta Cuspida—Flauto Cuspido. (Lat.) Cuspidatus = pointed. See SPITZFLÖTE. Lund Cathedral, Sweden.

Flauta Euskeria—(Sp.) = Euskarian, or Basque Flute.

Flautado—(Sp.) = Flute.

Flautado Kuerolofón = Waldflöte (horny-toned).

Flautado Principal = Diapason.

Flautado Violon = Gamba.

Flautina—Flautino. 2 ft.

Practically synonymous with Flageolet. Should any distinction be drawn, the Flautina is the more delicate of the two.

FLAUTINA DOLCE—2 ft.

A Flauto Dolce of super-octave pitch.

Flauto—(It.) = Flute; (Lat.) Flare = to blow (cf. English, inflate).

FLAUTO AMABILE—Flauto Amoroso, Flûte d'Amour.

(Fr.) Amour = love; (Lat.) Amorosus = loving. 8 ft.; 4 ft.

A small-scaled Flute of bright tone. Sometimes (e.g., by Lewis) voiced slightly stringy in quality, being a hybrid stop between Salicional and Flute.

Flauto di Pan—Pandean Flute. 8 ft.; 4 ft.; 2 ft.; 1 ft.

As 1 ft. it occurs on the Pedal, and as 2 ft. on the Oberwerk, at Lund Cathedral, Sweden, the pipes in both instances being of tin. In this capacity it is practically identical with Campana (q.v.). Pandean Flute, 8 ft. or 4 ft., is generally equivalent to Vienna Flute.

Flauto Dolce—Dolcan, Flûte Douce. (Fr.) *Douce* = sweet.

The correct name for what is known in this country and by many modern German builders as Dolce (*q.v.*).

Flauto Douce—Flauto Doris. 8 ft. ; 4 ft. ; (Fr.) *Douce* = sweet.

According to Seidel, a Flute with pipes tapering slightly (Gemshorn shape). Flauto Douce is also synonymous with Flauto Dolce.

Flauto Dulcio—Flauto Dulcis, Dulzflöte. (Lat.) *Dulcis* = sweet. 8 ft. ; 4 ft.

According to Seidel, an open wood Flute register, of small scale, with a sweet pleasant tone. Schlimbach states that it is practically a small-scaled Offenflöte. Flauto Dulcio is also a synonym for Flauto Dolce.

Flauto Grave—Grave Flute. 8 ft.

A fancy name for an ordinary full-toned Flute, used by Buckow (*e.g.*, Sohra, Silesia).

Flauto Italico—According to Schlimbach this is an ordinary Flute of 8 ft. pitch. The name occurs in some ancient specifications.

FLAUTO MAJOR—Major Flute; Tibia Major. 8 ft. ; sometimes 16 ft.

An ordinary combinational Flute of full tone. Sometimes applied in this country to Tibia Plena, and to a variety of Hohlflöte (Abbott & Smith).

Flauto Minor—8 ft. ; 4 ft. ;

Correctly speaking an octave Flauto Major; but occasionally, and perhaps more sensibly, applied to a stop similar to the Flauto Major, but less powerful.

Flauto Piccolo—See PICCOLO.

Flauto Staccato—4 ft.

A wood Flute, presumably mainly intended for use in *staccato* passages. Erlangen (1771).

Flauto Tedesco—Italian for Flute. 8 ft. ; 4 ft.

Italian was suggested by Dr. Audsley as the standard language for organ stop nomenclature, all other musical terms being couched in that tongue. As Mr. Robertson justly observes, the choice is particularly unfortunate, for Italian organs are of no particular excellence, and Germany has been our chief teacher in organ building. Moreover, it would appear that the use of Italian musical terms is becoming less general. Not, of course, that German terminology, with its difficulties of pronunciation, is here suggested as at all suitable, any more than Italian.

Flauto Traverso—Flûte Allemande, Flûte Traversière, German Flute, Piffaro, Quersflöte, Querpfeife, Traversflöte, Vienna Flute, Wienerflöte, etc. (Fr.) Allemande = German. (Lat.) Transversus or Traversus = across. (Ger.) Quer = across. Piffaro is onomatopœic, being derived from the “piff” or the lip tone accompanying the speech of the pipe. Vienna (Wien) Flute is an appellation lacking any historical foundation. 4 ft., sometimes 8 ft.; rarely 2 ft.

The Flauto Traverso is intended to represent the orchestral Flute player. By means of the slight lip tone above mentioned, the stop can be made perhaps one of the closest orchestral imitations on the organ. (See FLÛTE OCTAVIANTE). This type of tone does not exercise a beneficial effect in combination, and is therefore not encouraged now-a-days. The name Flauto Traverso has been applied to many varieties of Flute; it is now usually attached to a soft-toned and small-scaled Harmonic Flute suitable for the Choir organ. It is now, with but rare exceptions, made of metal, since wooden Harmonic Flutes are more troublesome to make and voice. Nevertheless, some good specimens have been made of the latter material by Mr. Compton of Nottingham. In many ancient Continental organs there are still to be seen Flutes of peculiar form and structure. Sometimes they are conical, sometimes cylindrical and bored out of solid wood, occasionally triangular or widening like the Portunal. They are usually fashioned of pear-tree or maple wood, sometimes of box or cypress. Frequently they are elaborately carved, even though the pipes be not exposed to view (e.g., Haarlem, Weingarten), a fact only in keeping with the wonderfully conscientious and artistic nature of the work of the organ builders living in an age when remorseless competition had not yet arisen. Some of these stops are “naturally” harmonic, i.e., caused to overblow by means of a narrow low mouth and copious winding. The cylindrical harmonic Flauto Traverso (e.g., by Schulze at Doncaster, Tyne Dock, etc.) bored out of solid wood, is now no longer made. The mouth consisted of a slit cut in the pipe, and, on account of the difficulty of regulating the exact height, often covered with a strip of parchment to serve as the upper lip. The block was merely a cork bung. The author once saw such a stop, burnt out of solid mahogany, in an organ built by an Indian officer, and has in his possession similar pipes of bamboo.

Müller of Breslau, again, introduced a variety of Flute in which the

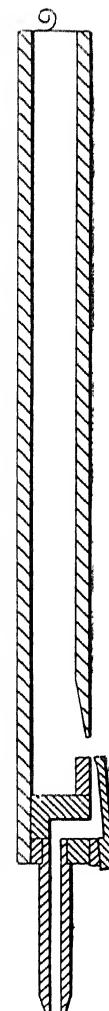


Fig. A—
Flauto
Traverso
(wood),
showing
inverted
mouth.

wind was carried by a channel or long cap (as in the French Flûte Traversière) to a mouth cut half way up the pipe. The author once saw an old stop of this form at Mr. Binns' factory. The mouths of these ancient examples of the Flauto Traverso were generally inverted, often consisting of a round orifice into which the wind was thrown by a sloping cap, fixed sometimes half-way over, sometimes just under. This type of Flute, generally known as Vienna Flute, and, of course, not harmonic, is still occasionally employed by English builders—usually on the Choir organ—for the sake of variety (e.g., by Conacher at Castlerock, Ireland). It exactly describes many of Bishop's "German Flutes," though other examples of

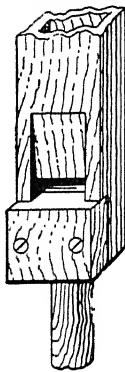


Fig. B—Flute with ordinary mouth.

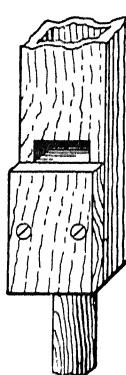


Fig. C—Flute with inverted mouth (Waldflöte, Suabe Flute, etc.).

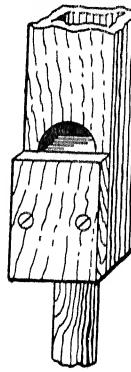


Fig. D—Flute with semicircular inverted mouth (Vienna Flute, Harmonika, etc.).

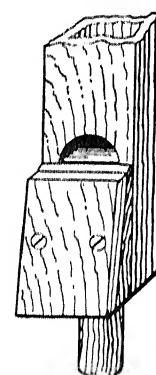


Fig. E—Flute with semicircular inverted mouth and wedge-shaped or slanting cap (Flauto Traverso, Orchestral Flute, etc.).

the latter were fashioned like Flutes with parabola-shaped heads (see also METALLIC FLUTE). The Vienna Flute is of hypothetical value. It is troublesome to make and voice, and the tone is by no means remarkable, but apt, rather, to be very "fluffy," and devoid of character. There are enough varieties of Flute tone, well differentiated and variegated, and more easily obtainable, to satisfy the most exacting of tastes; moreover, it is quite a mistaken notion to suppose that all Harmonic Flutes are exactly similar in quality apart from distinction of power. *Scales*—A Mid. C Vienna Flute in the author's possession, made in Germany, measures $1\frac{3}{8}$ in. \times $1\frac{3}{16}$ in. The mouth, which is semicircular, is cut up a bare $\frac{1}{2}$ in.

Flauto Unisone—8 ft. Unison combinational Flute.

Flautonne—(Sp.) = Gedackt. 16 ft.; 8 ft.; 4 ft. (2.) Synonymous, sometimes, with Flauto Dulcio 16 ft.

Flöte — (Ger.) = Flute.

Flue — Flue-work, or sometime Flutework. (Ger.) Labialstimmen (= lip-stops).

A collective name for those pipes possessed of a flue or wind-way and mouth, differing from those in which tone is produced by a vibrating tongue of metal (reed pipes). The term Flutework is not happy, as Gambas and stops other than those of Flute tone are included under the heading. In flue pipes, as demonstrated by Cavaillé-Coll in 1840 (*Etudes Expérimentales*), and independently by Mr. Hermann Smith in 1865, and Herr Sonreck of Cologne in 1876, the tone is produced by a free reed of air, or "aeroplastic reed," rapidly vibrating at the mouth and setting the column of air in the pipe into motion. This, of course, is opposed to the conventional theory of the splitting into two of the current of wind by the lip, whether sharp or thick.

Flue Clarinet, Flue Cor Anglais, Flue Euphone, Flue Oboe
(Ger.) Labial-Klarinette, etc.

The author once saw what is termed by its maker (a German builder) a flue Clarinet. It was an open wooden pipe, with a very low and sharp-cut inverted lip. In tone it could hardly be said to imitate a Clarinet any more than an Oboe, what it most resembled was "a bee-in-a-bottle." Its adjustment was such as to render it liable to be thrown off its speech by a very slight accumulation of dust. Various tones, however, can be built up, for solo purposes, compositely. As an experiment, let the reader sound middle C of the Great organ *Hohlflöte* 8 ft., together with middle C of the Choir organ *Harmonic Flute* 4 ft. In some organs a Gamba tone will be distinctly audible. One of the most valuable of *timbre*-creating stops is the *Quintatön*. In the remarkable organ built by the Austin Organ Co., of U.S.A., for the Angelus Co. (Mr. J. Herbert Marshall) at Regent House, Regent Street, W., may be heard a Flue Clarinet stop, built up of the *Quintatön* 8 ft.; and *Viole d'Orchestre* 8 ft. Herr Weigle, of Stuttgart, has also used *Quintatön* and *Viola* to form a flue Oboe (Military Church, Strassburg), and *Quintatön* and *Fugara* to form a flue Cor Anglais (Y.M.C.A. Hall, Stuttgart). In the case of the Cor Anglais the effect is remarkably good. The *Quintatön* is voiced stronger than the *Fugara*. Herr Laukhuff, of Wickersheim, Würtemburg (who holds Herr Weigle's English patent rights for the *Stentorphon*), has recently (March, 1905) taken up the manufacture and voicing of these labial reed stops, viz. —

Labial Clarinet—*Viola* and *Quintatön*.

Labial Cor Anglais—*Viola* and *Rohrflöte*.

Labial Euphone—*Viola* and (soft) *Flute*

Labial Oboe—*Violine* and *Quintatön*.

In the fine instrument at All Souls' Church, Radford, Nottingham (Musson & Compton, 1903) the Swell Viole d'Orchestre 8 ft. and Hohlflöte 8 ft., and the Contrà Viola 16 ft. and Hohlflöte 8 ft. were advisedly designed to produce similar effects. (See also COR ANGLAIS). The idea underlying the experimental use of these "flue reed stops" is the investigation into the possibility of dispensing with reed stops—with their attendant disadvantages in the matter of constant attention and tuning required—in village churches and other buildings remote from the care of a tuner.

Flute—32 ft.; 16 ft.; 8 ft.; 4 ft.; 2 ft.; 1 ft.; and Mutation.

A generic term for a quality of tone, comparatively dull and cloying, with but small development of upper partials. According to the ancient system of classification the term Flute comprised all stopped pipes, and even such open pipes as Gemshorn. The latter register may be said to be comprised under the heading of either Diapason, or string tone. At any rate it is far from being a Flute. Employed alone as a stop name, the precise signification of the term Flute is indefinite. See FLAUTO TRAVERSO, and the various types of Flute detailed below.

Flûte-à-becq—See FLAUT-À-BECQ.

Flûte-à-Bouche-Ronde—(Fr.) = Flute with a round mouth. Equivalent to Vienna Flute. See FLAUTO TRAVERSO. Wesleyan Church, Wigan (Conacher).

FLÛTE-À-CHEMINÉE—(Fr.) Cheminée = chimney. See ROHRFLOËTE.

FLÛTE-À-PAVILLON—(Fr.) Pavillon = bell. See BELL DIAPASON.

FLÛTE ALLEMANDE—(Fr.) Allemande = German. See FLAUTO TRAVERSO.

Flute Bass—See BASS FLUTE.

Flûte Bouchée—(Fr.) = Stopped Flute. Freiburg Cathedral, Switzerland.

Flûte Champ—See FELDFLÖTE.

FLÛTE CONIQUE—(Fr.) Conique = conical. 16 ft.; 8 ft.

A metal Flute of inverted conical shape. It yields a very hard and powerful tone, suitable as a double on organs of considerable magnitude. Albert Hall, London (Willis, 1871); St. Sulpice, Paris (Cavaillé-Coll).

FLÛTE COUVERTE—8 ft.

A special stop invented by Messrs. Conacher, of Huddersfield. It resembles the French Flûte-à-Cheminée, but is of larger scale—about 4 in. at the CC pipe (4 ft. actual length). The tone is extremely liquid and brilliant, and of some power. In addition to being of value as a combinational stop, the Flûte Couverte forms a most effective solo stop. The pipes are of pure tin, with chimneys from tenor C upwards, and with sliding ("canister") tops (for illustration of these see ROHRFLOËTE). The

lips are arched. It is to be regretted that one rarely finds a specimen of this class of stop in England. The French builders of repute use the Flûte-à-Cheminée extensively. First introduced at Derby Road Chapel, Nottingham (Conacher, 1894).

FLÛTE D' AMOUR—See FLAUTO AMABILE.

FLÛTE DOUCE—See FLAUTO DOLCE.

FLÛTE FONDAMENTALE—(Fr.) Fondamentale = fundamental, *i.e.*, foundation-supplying. 8 ft.

A variety of Hohlflöte used by Messrs. Brindley & Foster, of Sheffield.

Flûte Harmonique—See HARMONIC FLUTE.

Flûte Magique—4 ft.

An ordinary Flute, named after the Zauberflöte. Strassburg Cathedral (formerly).

FLÛTE OCTAVIANTE—(Fr.) Octaviante = speaking the octave. 8 ft. ; 4 ft.

A variety of Harmonic Flute. The true Octaviante, very seldom met with, is *said* first to touch the ground tone and then leap into the octave. An example is said to exist at Washington Temple, U.S.A. (Kimball Co.). But *ordinarily*, Flûte Octaviante is merely an alternative name for Flûte Harmonique.

Flûte Ouverte—(Fr.) Ouverte = open. 16 ft. ; 8 ft.

Merely a pedal open wood bass (Nôtre Dame, Paris) or the ordinary combinational Flute.

FLUTE-PRINCIPAL—4 ft. ; also 8 ft

A bright hard toned Flute, voiced usually, when of 4 ft. pitch, to form a compromise between a Flute and a Principal when both cannot be provided (see also SOLO).

Flûte-Traversière—See FLAUTO TRAVERSO.

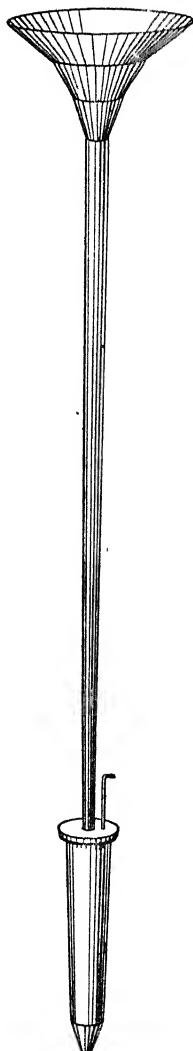
Fluttuan—16 ft. See COR DE NUIT. Neu Ruppin.

Foundation Stops—Also Foundation Tone.

Foundation is a term employed in contra-distinction to Mutation. Properly speaking, it includes all those stops the pipes of which speak a note corresponding to the key depressed, or one of its octaves. This will comprise double, unison, octave, super-octave stops, the Twenty-second, etc. Sometimes all stops speaking above unison pitch are inaccurately classified as Mutation stops. The term "Octave Foundation" would serve to draw a necessary distinction. The Foundation Tone of the organ practically comprises pedal Flues, manual Doubles, Diapasons (8 ft.) and Hohlflöte or Tibia—in fact the most dignified tone of the organ. Foundation tone in Diapasons refers more especially to the development of dignity and weight, as opposed to keen, stringy, or horny qualities.

Free Reeds.

The invention of free reeds is attributed to Kratzenstein, a German builder, domiciled at St. Petersburg under Katherine II (regnat 1762-96).



French Horn.
(Compton).

Seidel states that they existed in an embryonic stage some two hundred years previously. "The Chinese, however, had an instrument, the Tscheng, reputed to date from nearly 3000 years B.C. It consisted of thirteen, seventeen, nineteen or twenty-four pipes of bamboo, planted on a half gourd, with a mouth-piece attached. At the foot of the pipe was a *metal* free reed, set into vibration only when the hole at the foot of the pipe was closed by the finger, the breath being *drawn in*, and not exhaled, when playing."* The free reed was popularized by the celebrated Abt Vogler (1749-1814). But a Frenchman named Grenié was the first to set the use of free reeds upon an equitable basis. He succeeded in manufacturing a five-octave compass "orgue expressif" with well-regulated free reeds in 1810. An American citizen named Aaron Merrill Peaseley, in 1818; Bernhard Eschenbach, of Königshofen, Galifelde, in 1820; and Anton Häckel, of Vienna, in 1821, also built reed organs. Whereas Eschenbach's *Aéoline* or *Aéolodikon* was expressive, Häckel's original *Physharmonika* was not. The first examples of the modern type of free reed to be inserted in the organ were those introduced in 1827-29 at Beauvais Cathedral, France. Free reeds were practically perfected by M. Hamel (1786-1870).† See REED, CLARINET, COR ANGLAIS, MUSSETTE.

Frein Harmonique—(Fr.) Frein,

= bridle, curb. Harmonique = harmonic.

See BEARD.

French Horn—8 ft.

The accompanying illustration is that of a treble C French Horn pipe. This stop, the invention of Mr. John H. Compton, of Nottingham, gives a very faithful representation of the orchestral French Horn. The imitation of this instrument has been the ideal for which organ builders have for many years been striving. Its characteristic beauty of tone is such as

* From "The Precentor," Aug. 15th, 1903. An article by the author.

† See Bibliography introductory to this work.

to amply justify the cost of the stop, which is rendered rather expensive by reason of the immense sound-board space occupied. The treble C pipe is 2 ft. 3 in. long (tube), and 6 in. across the bell. See WALDHORN, DOLCE, WALDFLÖTE.

Frontispicium—(Lat.) Frons = front. Specto (*ab antiquo specio*) = to view. *cf.* (Eng.) frontispiece. See MONTRE.

Fuchsschwanz—Fuchsschwank. (Ger.) Fuchs = fox; Schwanz = tail; Schwank = joke.

One of the strange accessories sometimes found in old German organs. A stop-knob bearing the inscription “Noli me tangere” (“Do not touch”) was attached to the console. As a reward for their curiosity, persons who, regardless of this injunction, touched the knob, thereby set free the catch of a spring, causing a huge foxtail to fly out into their faces. Sometimes the foxtail was simply attached to the stop knob. Having once drawn the tail out of the jamb, it was a matter of some difficulty to replace it. Meanwhile, the recalcitrant culprit was subject to the chaff of his comrades. There is a foxtail near the dwarf “Perkeo,” guarding the great ‘Tun at Heidelberg Castle. St. Andrea, Erfurt; St. Gertrud, Hamburg.

FUGARA—Horn Gamba. Formerly Tibia Aperta. Generally 4 ft.; sometimes 8 ft.; rarely 16 ft.

A Gamba of horny, rather than keen, tone. It displays a quality much favoured in Germany but distinctly distasteful to the English ear. In former times, the Fugara occasionally possessed more of a Gemshorn quality; it was also sometimes composed of wooden pipes. The latter were variously shaped, being even tapering, or of triangular form. The Horn Gamba, as sometimes found in Hope-Jones organs, is of quite a different character. It is more musical. Though horny in a sense, it is not hard. It may be described as a Dolce pipe fitted with a beard, and “Gamba-ed” in tone. Roehampton Parish Church, (Hope-Jones).

Füllflöte—4 ft. A Flute of full tone. Triebel, Silesia.

Full Mixture—A Mixture of Diapason scale intended to amplify and extend the organ tone, as opposed to Sharp Mixture which adds brilliancy. The ranks, therefore, are not pitched so high as those of the latter.

Fundamen Reeds—The name originally applied by Mr. Hope-Jones to a very smooth and full-toned variety of reed, included in most of his instruments. See TUBA SONORA.

Fundamentalis = Prinzipal. Canberry.

Furniture—Fourniture. A full-toned Mixture of considerable power. A possible (though, perhaps, rather far-fetched) derivation is (Fr.) fournir = to supply; from the fact that the stop supplies great brilliancy, adding appreciably to the tone.

G.

Galonbel—A Mixture stop at St. Ouen, Rouen. MM. Mutin, the successors to MM. Cavaillé-Coll who built the organ, are unable to supply the author with any information concerning the composition of this stop or the origin of its name.

Gamba—Viola da Gamba, Viola, String Gamba. See also **VIOLA DA GAMBA**. 8 ft.; 16 ft.; occasionally 4 ft.

The tone of the Viola da Gamba is akin to that of the Violin. But the effect on the organ most suggestive of divided orchestral "strings" is obtained by the use of the Voix Céleste stop with a keen Gamba or Viole d' Orchestre. The Gamba is of smaller scale and less powerful tone than the Diapason; it is voiced keen, *i.e.*, with the upper partials prominently developed at the expense of the ground tone. The mouth is kept low. The stop is best made of tin or spotted metal. Gambas of fairly liberal scale have successfully been made of wood (*e.g.*, by Schulze, Booth of Wakefield); but the satisfactory treatment of small-scaled wood trebles presents well-nigh insurmountable difficulties to the voicer. Wood basses are sometimes used, but here again the difficulty of voicing extremely small-scaled wood basses is such as to render them ill-adapted to match the tone of small metal Viols. There is, however, a very satisfactory wood bass to the Swell Contra Viola voiced by Mr. Compton in the organ at All Souls, Radford, Nottingham (Musson & Compton), measuring but $1\frac{1}{2}$ in. at CC. The German Gamba (*q.v.*) is happily extinct, and the varieties known as Bell Gamba (*q.v.*) and Cone Gamba (*q.v.*) are but infrequently employed. Of recent years the old colourless Gambas, suggestive rather of Horn Diapasons, and usually attended by that disagreeable defect of speech known as "spitting," have well-nigh disappeared. The introduction of keen æthereal string tones, rendered possible by the use of the Beard (*q.v.*), constitutes one of the most remarkable developments of modern organ tone. The most recent achievements in this respect are treated of separately under the heading "Viole d' Orchestre." When not overblown, modern Gamba tones combine excellently with most other stops. They are in every way preferable to the older variety (but see **BELL GAMBA**). In 8 ft. pitch, the manual Gamba is now practically confined to the Swell and Choir organs, having been expurgated from the Great as injurious to true Diapason tone. Combined with Diapasons of the ordinary type, Gambas certainly exercise a morbific influence on the general foundation tone, but to the modern full-toned leathered Diapason string tone of a certain species, when judiciously blended, is, under certain conditions, highly beneficial. It is a fact that stringy or slotted Diapasons "build up" better than those of the type usually preferred, and in particular blend better with bright-toned Principals. Unless a second

Diapason of the stringy type, or a Gamba, is comprised in the Great organ scheme, the Diapason has frequently to be actually *spoilt* in tone (so far as its extra-combinational usage is concerned) in order to make provision for this state of affairs. In some of the Hope-Jones organs a Muted Viol will be found on the Great organ, and, whilst it would ostensibly seem to be placed there for accompanimental purposes (and very useful it is), despite its quietness of tone it most certainly *does* have the effect of binding together the upper work and the foundation tone to a remarkable degree. It is not inconceivable that the modern demand for depth in Diapason tone is practically responsible for the lack of blend in much of our Mixture work. An alteration of the foundation will necessarily affect the superstructure. It is not, of course, to be inferred from these remarks, that stringy or slotted Diapasons are in any way preferable to the full-toned variety, for even if they do "build up" better it is only because much of their foundation is sacrificed to brilliancy. The danger confronts one only, when, in the praiseworthy attempt to ensure that depth and dignity which rightly forms the basis of all good organ tone, other functions of the Diapason are disregarded.

The 16 ft. Gamba forms a valuable manual Double, its lightness of tone precluding the overbalance of the unison stops, and its harmonic development serving to impart cohesion of tone, and lending richness in combination. A stop midway in character between a Diapason and a Gamba is frequently found as the Great organ Double, whilst the Swell Contra Gamba, or Contra Viola, is probably the most effective flue Double for that department. On the Pedal organ, also, a fairly powerful and keen Gamba 16 ft. is a stop of rare beauty and great utility (e.g., York Minster, Walker). The 4 ft. Gamba, sometimes named Gambette, Violette or Octave Viole, or an Octave Geigen Principal, forms an effective octave Swell register. It adds life and vigour to the flue work, having, apparently, the effect of rendering it more susceptible to the influence of the swell shutters. Worcester Cathedral (Hope-Jones); Claines Church, Worcester (Nicholson); All Souls, Nottingham (Musson & Compton). *Scales*.—The string Gamba in the Hope-Jones organs is sometimes made to these measurements: CC, $3\frac{1}{15}$ in.; T.C., $1\frac{7}{8}$ in.; Mid. C, $1\frac{1}{8}$ in.; Tr. C, $\frac{3}{4}$ in., $\frac{1}{2}$ mouth, cut up $\frac{1}{3}$, and rollered. The CC pipe of a wood Gamba by Bishop measured $3\frac{7}{8}$ in. \times $3\frac{1}{8}$ in., the mouth being rollered, and cut up $\frac{7}{8}$ in. Zinc Gamba basses of $3\frac{3}{4}$ in., 4 in., or even $4\frac{1}{2}$ in., are still often made by builders unduly conservative in their tastes or who fight shy of the difficulty and trouble of voicing smaller ones.

GAMBETTE—See GAMBA.

Gar—In German organ building phraseology the equivalent of our "prepared." (Ger.) Gar Kein Flöte means "no Flute at all."

Gedeckt—See **GEDACKT**.

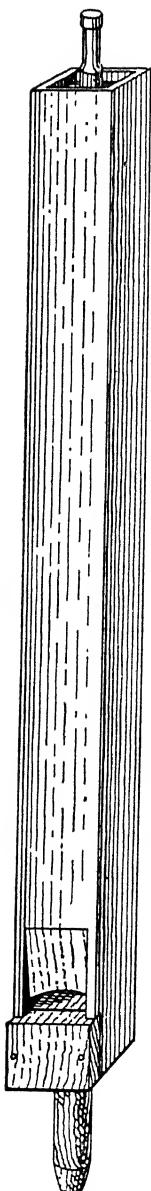
Gedackt-Bommer—For derivation see **BOMBARDE**. 8 ft. tone.

A stopped register of this name occurred at St. Peter and St. Paul, Görlitz (Casparini, 1703). It has been stated that it over-blew into the first harmonic, the twelfth, that it was virtually a harmonic stopped Twelfth, and therefore, an anticipation of Mr. Thynne's *Zauberflöte*. Werkmeister, and after him Hamel, however, speak of it as a Quintatön. Certainly the *name* would seem to imply a coarse-toned Gedackt, with the twelfth so developed as to suggest the idea of a "*growling*"* tone. On the whole, there would seem to be no adequate ground for assuming the entire elimination of the fundamental or prime tone of the stop.

Gedämpft-Regal—**Gedempft-Regal**. See **REGAL**.

Gedeckt—Gedackt, Stopped Diapason. (Old Ger.) Gedackt, (Ger.) Gedeckt = covered. (Ger.) Decken = to cover; cf. (Eng.) deck. (Anglo-Saxon) Theccan, from which is also derived (Eng.) thatch. 8 ft. ; 16 ft. ; 4 ft. ; rarely 2 ft.

In the case of the name, Stopped Diapason, the word Diapason is used in the sense of a standard, the register being to stopped flue pipes what the Diapason is to open flue pipes. But the title is apt to be misleading, since the tone of the stop in no way resembles Diapason tone. It might well, therefore, be permitted to lapse. It is curious that the earliest form of organ pipe known, the Pandean Pipe, was stopped. From it was evolved the open pipe, and the stopped pipe, as known to-day, was not re-invented until the close of the XVth century. The Gedeckt is formed of stopped pipes of wood or metal. In this country the former material is rapidly being discarded for this stop in favour of the latter; but if the same effect is to be gained the metal must needs be of some thickness. In view of this fact it is altogether questionable whether the wholesale discardment of wood is a change for the better. The bass of metal Gedeckts is generally made of wood. The stoppers of wood pipes are covered with leather, whilst those of metal pipes are now usually lined with cork, a practice introduced by Willis. The lips of metal Gedeckts are left thick, and often not flattened into a leaf at all. The mouths are cut up



Gedeckt
(wood).

* (Ger.) Brummen = to growl or mutter.

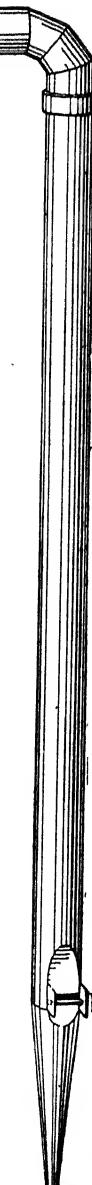
high. The scale of the Gedeckt varies considerably according to the power and quality of tone required. A soft-toned Gedeckt, suitable to the Swell or Choir, is known as Lieblich Gedeckt. It is usually made of metal. Modern voicers generally provide the Gedeckt (unless of very large scale) with pierced stoppers like the Rohrflöte (*q.v.*). A large-scaled Gedeckt, with thick or leathered lips and distinctive tone was invented by Mr. Hope-Jones, and named Tibia Clausa; other varieties also were introduced by Mr. John H. Compton under the names of Tibia Minor and Tibia Mollis. An excellent effect is obtained by voicing the Swell Gedeckt full and liquid in tone, with the twelfth well developed. When so treated it is particularly useful in combination, acting as a sort of "timbre-creator." A Choir Lieblich, on the other hand, might be bright and crisp, with the twelfth restrained. The Stopped Diapasons of the early English builders were frequently voiced with the twelfth very prominently developed, hence their excellent blending properties. They were, indeed, virtually Quintatöns. Snetzler inclined more in taste to the Chimney Flute. See BOURDON, DOPPELGEDACKT, GROB-GEDACKT, GROSS-GEDACKT, KLEIN-GEDACKT, LIEBLICH GEDECKT, MITTEL-GEDACKT, STILL-GEDACKT, TIBIA CLAUSA, TIBIA MINOR, TIBIA MOLLIS. *Scales.*—Old English type: CC, 5 in. \times 4 $\frac{1}{2}$ in. Low mouth and light wind pressure. Modern style: CC, 4 in. \times 3 in. See LIEBLICH GEDECKT *Scales*.

Gedecktflöte—Gedacktflöte. See LIEBLICH FLÖTE.

Geigen Principal—Violin Diapason.

(Ger.) Geige = Violin. 8 ft. ; 4 ft. ; occasionally 16 ft.

A stop midway in tone between Diapason and Gamba, rather more keen than Horn Diapason. The true Geigen is rarely found in England; it is fiery rather than horny, and the bass is usually bearded. There are excellent specimens, however, at Battersea Polytechnic (Beale & Thynne, voiced by Whiteley); All Souls, Nottingham (Musson & Compton); Oulton Rocks, Stone, Staffs. (Binns). The stop usually found under this name in England is a Diapason rendered horny and objectionable by slotting. A small-scaled crisp Diapason of slightly stringy tone forms an excellent Choir organ stop (*e.g.*, Parish Church, Burton-on-Trent, Norman & Beard and Hope-Jones). In 4 ft. pitch it forms an excellent octave stop



Geigen Principal (rolled), with single mitre.

in the Swell (see GAMBA). Geigen Principal, 8 ft., CC measures 4 in. (Bishop); $4\frac{1}{2}$ in. (Compton); $5\frac{1}{4}$ in. (Brindley & Foster). Mouth usually $\frac{1}{4}$ or $\frac{2}{7}$ cut up $\frac{1}{3}$. 4 ft. C, $2\frac{3}{4}$ in.

Geigen-Regal—See REGAL.

Gemshorn—Ancient names: (Fr.) Cor de Chamois (= goat horn). Gemster, Hörnlein (Ger. = little horn). Occasionally the title Coppelflöte (coupling Flute) was applied to the Gemshorn. (Ger.) Gemse = goat. The stop was named after the horn of the goat herds. Abroad, it is found in 16 ft.; 8 ft.; 4 ft.; 2 ft.; 1 ft.; and Mutation pitch, but in this country it is almost invariably of 4 ft. pitch.

The Gemshorn, which was invented before the middle of the XVIth century, is of soft and reedy tone, very clear and sweet. Helmholtz attributes its characteristic tone to the particular development of the harmonics: tierce, larigot, and flat septime. The stop was formerly classed as a Flute, but it is assuredly more reasonable to group it as a string-toned or Diapason stop. The pipes taper, as they ascend till the diameter of the body at the top is about one-third of that at the mouth. The Gemshorn forms a useful choir organ octave stop. It is also well adapted to the Swell of small organs; but in instruments of medium size a Geigen Principal is probably the more effective, since the tone of the Gemshorn is scarcely of the requisite degree of boldness. The Gemshorn of English Swell organs, indeed, is usually a loud Principal, rendered horny (and probably objectionable) by being slotted. The Harmonic Gemshorn 2 ft. is occasionally made. One particular example at Rugby School Chapel (Bryceson) struck the author as probably the most effective Swell super-octave stop he had heard. The Gemshorn is largely employed abroad in Mutation work, chiefly as Gemshorn Quint and Twelfth; it is less frequently used for the Tierce and Twenty-Second. In the latter capacity it is to be found at the Lutheran Church, Leman Street, E. (Walcker). *Scale*.—4 ft. pipe, 3 in. at mouth, Gemshorn, $1\frac{1}{8}$ in. at top. Mouth usually $\frac{1}{4}$ or $\frac{2}{7}$, cut up $\frac{1}{3}$.

Gemshornquint—A Quint of Gemshorn pipes.

Gemster—Lucerne Cathedral. See GEMSHORN.

GERMAN FLUTE—Flûte Allemande. See FLAUTO TRAVERSO, and also ZAUBERFLÖTE.

German Gamba—8 ft.

A variety of Gamba, introduced into this country by Schulze at Doncaster Parish Church and the Temple Church, London. The pipes were of large scale, and often devoid of ears. In order to preserve its characteristic pungent tone quality (which, *en passant*, was at that time somewhat of a novelty in this country), the speech of the pipes had to be left very slow and uncertain. Accordingly, the stop was always drawn with a “helper” (*q.v.*) or Coupling Flute, to bring the pipes on to their speech. Strange to relate, some folks, who never seem to tire of discounting modern organ tone, lament the decease of this abnormity, claiming that it possessed a quality of tone which is inimitable. In support of this assertion, the fact has been adduced that the late Dr. Hopkins of the Temple Church, being dissatisfied with the speech of his German Gamba, had it bearded, with the result that, though the defects of speech were remedied, the distinctive tone character was lost. Be this as it may, the writer has heard at Aix-la-Chapelle Kurhaus (Stahlhuth) a bearded Gamba of tone quality practically identical with that of the Doncaster stop, but of faultless speech. Regarded as the progenitor of modern string tone, the German Gamba was certainly creditable to its period; but to put forward such predeluvian abnormities as models for the instruction of modern artists is ludicrous in the extreme. Doubt has been cast on the German origin of this stop, but in reply it may be submitted that the old Schweizerflöte was its counterpart.

Gesang-Regal—See REGAL.

Gewitter—(Ger.) = thunderstorm. See EFFETS D' ORAGE.

Glocken—(Ger.) Glocke=a bell. A prefix meaning Bell. Glockengamba = Bell Gamba.

GLOCKENSPIEL—See CARILLONS.

Glöcklein—Glöckleinton, Tonus Fabri (*q.v.*). (Ger.) Glocke = bell. *lein* is a diminutive suffix, akin to (Eng.) *ling*.

Boxberg, referring to the Glöckleinton at Görlitz, states that, when drawn with the Quintatön 16 ft., it could be most effectively used for arpeggio passages. See CAMPANA.

GONGS—See CARILLONS.

GRAND—A prefix intended to convey the information that the stop so designated was of large scale and imposing effect. Equivalent to one meaning of the German “Gross.” The prefix “Grand” was formerly much used in England (*e.g.*, by Bishop, Gray & Davison, Willis, etc), often rather loosely; but it is seldom now employed. Generally applied to pedal stops: Grand Bourdon, Grand Open Diapason, etc.

The word Grand is also sometimes to be found applied to the chief manual of an organ instead of the term "Great." At Birmingham and Leeds Town Halls, the Great organ was formerly named the Grand organ. The latter designation is also sometimes attached to instruments of large size, principally in concert halls, and in France the word Grand is used to distinguish the west end organ from that in the choir.

Grave Mixture—A two-rank Mixture stop, composed of Twelfth and Fifteenth on one slider. So named in contradistinction to Sharp Mixture, on account of the grave or full effect imparted by the Twelfth rank. See RAUSCHQUINT.

Gravissima—(Lat.) = very deep.

The name applied to the 64 ft. Resultant Bass at Worcester Cathedral (Hope-Jones, 1897).

Gravitone—See ACOUSTIC BASS.

The title given to the 64 ft. resultant stop in the organ at the Colston Hall Bristol (Norman & Beard).

Great Bass—See MAJOR BASS.

Grêle—(Fr.) = hail.

Realistic hail-storm effects, secured by means of a rotating drum filled with peas. Messrs. Maskelyne & Cooke, of recent years, have used similar devices at the Egyptian Hall, Piccadilly, W. St. Sulpice, Paris (formerly).

Grob—(Ger.) = rough.

A prefix indicating strength, and in some cases roughness, of tone.

Grob-Cymbel, **Grob-Mixtur**, **Grob-Posaune**, **Grob-Regal**, are also found.

Grob-Gedackt—A Gedackt of large scale and powerful intonation.

GROSS—(Ger.) = great.

A prefix signifying usually sub-octave pitch, but sometimes equivalent to Grob.

GROSSFLÖTE—8 ft.; 16 ft.

A powerful manual or pedal Flute, made sometimes as a Doppelflöte. The name is often employed in America.

GROSS-GEDACKT—8 ft.; 16 ft.

A 16 ft. Gedackt, or identical with Grob-Gedackt.

Gross-Ranket and **Gross-Regal** are also found.

H.

Hahn—(Ger.) = cock.

A stop, found in some ancient Continental organs, imitative of the crowing of the cock to announce the dawn of day (particularly Christmas Day), or reminiscent of St. Peter's Denial. Magdeburg Cathedral (1604).

Hail—See GRÈLE.

Halb—(Ger.) = half. A prefix equivalent to "octave" (e.g., Halb-prinzipal).

Half-stopped Pipes—See ROHRLÖTE.

Harfen-Prinzipal—(Ger.) Harfe = harp.

Akin to Geigen-Prinzipal. Adlung refers to a 4 ft. Nachthorn at Gera, resembling a harp in the top octave. Breslau.

Harfen-Regal—See REGAL.

HARMONIA ÆTHERIA—Harmonica Ætheria.

A delicate Mixture stop. It is generally made either as a soft Dulciana Mixture, or definitely of string-toned pipes. It is thus virtually identical with Echo-Cornet or Dulciana Cornet. Needless to say, any such stop, when properly tuned, is a most useful adjunct to the organ. Stadthalle, Heidelberg (Voit).

Harmonic Claribel—8 ft.

A name introduced by Mr. Casson to designate a large-scaled Harmonic Flute of thick, full tone. The Willis Claribel Flute is usually a metal stop, of harmonic structure. There was also an example of the Harmonic Claribel in the Hope-Jones-Denman organ at Holy Trinity, Scarborough. There is an instance of the Harmonic Claribel, 8 ft., in the organ at the Colston Hall, Bristol (Norman & Beard, 1905). It is a wood Claribel Flute with inverted mouth, speaking on 20 in. wind. The stop, which is of very large scale, is of double length from mid. C upwards.

HARMONIC DIAPASON—8 ft.

A hybrid stop, which, as the outcome of an attempt to obtain powerful Diapason tone from pipes of harmonic construction, is virtually a very coarse-toned Harmonic Flute. The pipes are harmonic from fid. G., mid. C, E or F upwards, the bass being "tubby" in scale and tone. The Harmonic Diapason was a pioneer attempt to produce the "big" foundation tone so characteristic of the modern English organ. Now-a-days, to procure this desirable feature, we set to work in the opposite direction, endeavouring to secure weight and depth of tone rather than mere stentorophonic noise. Such stops as the leathered Diapason, Tibia Plena, Tibia Minor, etc., whilst in themselves apparently of no extraordinary

power and pre-eminently mellow and musical, are nevertheless possessed of far greater pervading and travelling power, and exercise a more beneficial influence on the general tone, than blustering stops of the Harmonic Diapason and Stentorphon type. Instead of amalgamating with the true organ tone the Harmonic Diapason cuts through it, being raucous and unduly self-assertive. St. Columb Major, Cornwall (1877); Paisley Concert Hall (1882); Rugby Speech Room (1890). All by Bryceson.

Harmonic Flute—(Fr.) *Flûte Harmonique*; (Ger.) *Harmonieflöte*; (Sp.) *Flauta Armónica*. 8 ft.; 4 ft. Invented by Cavaillé-Coll. See HARMONIC PIPES and FLAUTO TRAVERSO.

The tone of the Harmonic Flute, as of most flue pipes, can be varied considerably in power, and to some extent in quality, by regulating the width of the mouth. In 4 ft. pitch on the Great organ it forms a stop invaluable for accompanimental usage, and, provided it is not unduly powerful, beneficial in combination. In 8 ft. pitch it is not very suitable to the Great organ, for, if sufficiently powerful to be serviceable, it is apt to render the Diapason tone "muddy," and certainly does not supply as much body and "filling" power as a *Hohlflöte* or *Tibia*. When incorporated in the Choir organ the stop is usually named *Flauto Traverso*, and made of 4 ft., though occasionally of 8 ft., pitch. The Choir organ *Flauto Traverso* is of quiet tone and voiced with more character than the larger-scaled Harmonic Flutes. The Solo organ Harmonic Flute is powerful and legitimately somewhat hooting in tone. It is sometimes enclosed, sometimes not. It would certainly seem more satisfactory to enclose stops of this class, alike in resonant and unsympathetic buildings, for the sake of the expressive facilities thereby obtained. The Harmonic Flute combines effectively with such imitative and orchestral reeds as the *Vox Humana*, *Orchestral Oboe*, *Bassoon*, etc. With certain types of the *Vox Humana*, indeed, most peculiar *timbres* may be built up. Many combinations of this class are enhanced by the use of the Tremulant, upon the speed and power of which their success is largely dependant. When enclosed there can scarcely be any objection to the lowest octave of the 8 ft. variety being composed of stopped pipes. Harmonic Flutes may be of very full cloying tone, or liquid and bright. An instance of the former, with leathered lips, may be heard to advantage at St. Stephen, Wandsworth, S.W. (Whiteley), as a Great organ 4 ft. stop; whilst good examples of the latter variety may be often encountered in the work of Messrs. Walker (e.g., York Minster; St. Margaret, Westminster). Specimens of each kind are useful in large organs, though the fact must not be ignored that the liquid and hooting style of Harmonic Flute owes its successful effect to favourable acoustical conditions far more than to any peculiarly meritorious voicing. At the Parish Church, Hucknall Torkard, Nottingham (Musson & Compton), may be heard side by side an exceedingly full-toned Solo-

Harmonic Flute, and a liquid and bright 4 ft. Great stop. The former, which is voiced on a heavy wind pressure, is made of extremely thick and weighty metal, and provided with leathered lips.

In many of the larger instruments of Cavaillé-Coll, the Solo Harmonic Flutes frequently sound distressingly coarse when heard close to, a quality of tone probably due to the sharp thin lips and thin tin pipes he, in common with the majority of French builders, employed. When heard at a distance this disagreeable feature is not noticeable, indeed the stop there probably sounds all the better for this boldness of treatment. In the author's estimation, however, Messrs. Walker's stops of this class are preferable. Yet, so far as large buildings are concerned, if the provision of both varieties of Harmonic Flute is not contemplated, the fuller toned type of stop will probably be found the more effective. Derby Road Church, Nottingham (imported from Cavaillé-Coll by Conacher); Albert Hall, Sheffield; Town Hall, Manchester (Cavaillé-Coll). The author, also, has in his possession a typical Harmonic Flute pipe made by this firm. See also FLÛTE OCTAVIANTE.

The pipes of the Harmonic Flute are variously made with and without ears. Occasionally they are furnished with long ears for tuning purposes (see BELL GAMBA). Roughly speaking, the hole or holes rendering the pipes harmonic may be pierced anywhere in the middle portion of the pipe; but the position in which they are most conducive to facility of speech is supposed by some voicers to be at a distance of two-fifths up the pipe. The Harmonic Flute is copiously winded, though no increased pressure is necessary save in the case of solo varieties. The pipes are of harmonic construction variously from fid. G, mid. C and F upwards, the bass pipes being voiced "tubby" to match, and therefore sometimes known by the classical (!) appellation of "Tubs." Some builders cause the upper lips of Harmonic Flute pipes to protrude considerably, the process being known technically as "lifting" the lip. An example of a stop so treated may be seen at Moreton, Dorset (Conacher). *Scales*.—Harmonic Flute, 4 ft. CC, 3 in.; Mid. C (harmonic), $1\frac{3}{8}$ in. Solo Harmonic Flute, 8 ft. CC may measure anything from 4 in. to 8 in. or 9 in. Open wood bass, CC, 6 in. \times 5 in. Metal T. C, $3\frac{3}{4}$ in. Metal (harmonic) Mid. C, 3 in.



Harmonic Flute.

Harmonic Gedackt—See ZAUBERFLÖTE.

Harmonic Piccolo—See PICCOLO.

Harmonic Pipes.

Pipes so treated as to speak their first upper partial instead of the fundamental or ground tone. Wood Flutes caused to overblow by means of a low mouth and copious winding date from a comparatively early period in Germany (see *FLAUTO TRAVERSO*). The idea of employing harmonic tones for the sake of increased power in the treble of stops, together with the invention of the method now in vogue for the production of such tones, is due to the late M. Aristide Cavaillé-Coll, having first been embodied in his fine organ at the Abbey Church of St. Denis, near Paris. By Cavaillé's method, open flue pipes are pierced half way up with one or more small holes. These perforations have the effect of causing the vibrating air column in the pipe to split in half and thus to yield its half-length tone, the octave. The actual length of the harmonic portion (treble) of an open harmonic stop is thus twice the real speaking length indicated on the stop label. The first harmonic above that speaking is, of course, the twelfth. Harmonic stopped pipes overblow into the twelfth (see *HARMONIC STOPPED TWELFTH, ZAUBERFLÖTE*). It has erroneously been advanced that Cavaillé-Coll's invention was anticipated by Gabler at the Benedictine Monastery, Weingarten, (1750). The statement, which is repeated by a writer in Grove's Dictionary, would seem to be based on the fact that in the specification of this organ, as given in Hamilton's "Catechism of the Organ," and also in Hopkins' and Rimbaud's treatise, appears the term *Harmonic Violoncello, 8 ft.* As a matter of fact this stop was only rendered harmonic during the restoration of the organ by Weigle. See *DOPPELFLÖTE, HARMONIC FLUTE, HARMONIC REEDS*, in addition to references already indicated.

Harmonic Reeds—See Harmonic Pipes.

Reeds with double-length tubes in the treble. Such pipes, however, unlike those of harmonic flue stops are not usually perforated in the middle, as this treatment is unnecessary in the case of reed pipes. Harmonic Reeds were introduced by Cavaillé-Coll in conjunction with increased pressure with the object of securing, in the treble, power proportionate to that of the bass. This conception was further expanded in the system of reed voicing of George Willis, who employed harmonic reed work not only for this purpose, but in order to secure also smoothness and breadth of tone. It is a delusion to suppose that harmonic reeds are necessarily noisy or unduly powerful—they can, if desired, be voiced softer than ordinary true-length pipes. As a matter of fact the mere process of making a reed harmonic, apart from details of winding, tends to *subdue* its tone. Granted, however, a moderate reserve of wind pressure, it is easier to secure due prominence of tone in the treble than is the case with a pipe of true length. The harmonic structure of chorus reeds enables them to

stand better in tune, and renders the tone purer, removing the wearisome clang or nasal sound, inseparable, even by such a past-master as Willis, from non-harmonic reeds. Such a combination of virtues should be sufficient to establish their irrefragable usage. After the super-excellent results, loud and soft, achieved by the Willis system, the ultra-conservatism of those few builders who reject the harmonic system, must be described as nothing short of farcical.

Harmonic Stopped Twelfth— $2\frac{2}{3}$ ft.

A stopped pipe of 4 ft. actual length, overblown to speak its first harmonic (the twelfth, $2\frac{2}{3}$ ft.). The Harmonic Stopped Twelfth was introduced by Mr. Casson at Omagh, Co. Tyrone, Ireland. The tone of this stop is full and clear. In combination it is less assertive than the ordinary Diapason Twelfth, its influence, therefore, is such as to induce greater cohesion of tone. The *stopped* pipe is employed on account of its fewer harmonics. It is the harmonics and general lack of purity in the tone of Mixture pipes which renders them so frequently unduly assertive in combination. The Stopped Harmonic Twelfth also sometimes admits of effective use with other soft registers as a *timbre*-creator. See ZAUBERFLÖTE. Omagh; London Organ School; Chamber Organ, Cathcart House, Kensington, S.W. (Positive Organ Co.).

HARMONIC TIERCE, TWELFTH, Etc.

Mutation ranks are sometimes made of double length and harmonic intonation. The effect of this treatment is to increase their power without giving rise to concomitant development of their own upper partials. As a result they also stand better in tune and are less affected by fluctuation of wind pressure than the true-length varieties. The practice is not unknown abroad. See HARMONIC STOPPED TWELFTH. Maynooth College, Ireland (Stahlhuth); Emmanuel Church, Nottingham, Hucknall Torkard, Nottingham (Musson & Compton).

Harmonic Trumpet—(Fr.) Trompette Harmonique.

8 ft.

A clear-toned Trumpet, harmonic in the treble. The name is also sometimes employed to designate a Tuba of somewhat lighter tone than the customary full and "thick" variety. See TUBA.

HARMONIE—A prefix indicating (1) that the stop is voiced for combinational use. (Fr.) Cor d' Harmonie. Or (2) that the stop is of harmonic structure. (Ger.) Harmonieflöte.

HARMONIKA—Harmonica. Also Harmonikabass. 8 ft.; 16 ft.

An open Flute of soft and delicate intonation, often slightly stringy in tone. It is generally made of wood and bearded. As a manual stop it is quite unknown in this country. On the Pedal organ the Harmonikabass

corresponds to a small-scaled Major Bass or wood Violon. Ulm Münster; Gewandhaus, Leipzig (Walcker).

Harmonium—A free reed stop, very rarely found under this name, is identical with Clavæoline or Physharmonika.

Harp—A stringed instrument introduced by Schwarbrook as an organ stop into the instrument at St. Michael, Coventry (1733).

Harp Æoline—Harp Æolone. See ÆOLINE, also KEROPHONE.

Hautboy—Hautbois. See OBOE.

Hedeiaphone—(Gr.) *ἱδαιώνη* = pleasure, *φωνή* = voice.

A stop invented by Mr. Hope-Jones, and consisting of metallic plates set into vibration by an alternating current of air. The tone resembled that of gongs. No example exists, but a specimen was exhibited at a lecture delivered by Mr. Hope-Jones at Birkenhead.

Heertrummel—(Ger.) Heer (prefix) = military; Trommel = drum.

Bärffusskirche, Erfurt; Schlossorgel, Dresden; St. Gotthard, Hildesheim. The organ at Sondershausen contained Rechte-Heertrommel (= right-hand drum).

Hellpfeife—Hellflöte. (Ger.) Hell = clear. Signifies either Campana or Sharp Mixture.

Helper—A stop, the function of which was to assist the speech, or improve the tone, of some other stop or stops. A Helper was introduced by Bridge at Christ Church, Spitalfields (1730). The bass of the second Diapason, being stopped, was accompanied in its speech by Principal pipes. The Bass Flute 8 ft. was formerly regarded as the Helper to the Bourdon 16 ft., and a Hohlflöte or Coupling Flute formed a Helper to the German Gamba.

A curious device for facilitating promptitude of speech was occasionally adopted in Germany. Attached to the outside of a Violone pipe, just above the mouth, was a short stopped pipe *body* (no mouth). Such wind as blew on the outside of the pipe lip, served to throw the air column in this into vibration, the note thereby induced materially aiding the speech of the main pipe. Various forms of self-contained Helpers have been devised by Mr. Hope-Jones. In one instance the block of a wooden pipe was pierced with a hole, to the underside of which was attached a sort of hanging trap-door or oval pallet. As the wind entered the pipe this pendant door was intended to close with some force and so set the column of air in the pipe into vibration, thus relieving the wind at the lip of a large share of its initial work. The idea is highly ingenious, but whether such a device would be satisfactory in operation is more than doubtful.

HOBOE—(Ger.). See OBOE.

Hohlföte—Hohlpfeife. *Anglice* Hohlföte, Hohl Flute. (Ger.)
Hohl = hollow. 8 ft.; also occasionally 16 ft.; 4 ft.; 2 ft.

The Hohlföte is a stop composed of pipes of fair scale, usually, though not invariably, made of wood. The German variety is of thick tone resembling more closely the Clarabella than the English Hohlföte. The latter stop may be said to date from the time when William Hill, whose work is a monument to his genius, bored two holes through the top of a wood pipe (obtaining a variety of Keraulophon-Flute tone) and labelled it Hole-Flute! A stop named Hohlföte 4 ft., of similar construction, occurs on the Choir organ at St. Mary, Nottingham (Bishop). *Query!* Which is right, Hole Flute or Hohl Flute?

Father Smith's Hol-Flute (Temple Organ) was a Rohrflöte. The modern English Hohlföte (distinct of course from the Hole-Flute above mentioned) differs from the Clarabella in possessing a harder and less thick tone, a quality, it may be added, very rare in Germany, but none the less, on that account, valuable and intrinsically beautiful. The mouths are sometimes inverted. They have even been made slanting (*i.e.*, falling obliquely across the pipe front), with the object of increasing their breadth, though the results of such treatment are not altogether satisfactory. Some builders (*e.g.*, Messrs. Norman & Beard, and Mr. John Whiteley), sometimes cover the lips of this stop with cartridge paper, ensuring thereby smoothness and roundness of tone. The Hohlföte is generally made with a sunk block or "well." This has the effect of rendering the tone more hollow. The sunk block is also used for other Flute tones. A sunk block is shown in the illustration of the Flauto Traverso pipe (*q.v.*).



Hohlföte
(metal).



Triangular
Flute
(inverted
mouth).

At Doncaster, Schulze introduced, for the first time in this country, a triangular Hohlföte. It is sometimes claimed that the tone of triangular pipes differs from anything that can be obtained from pipes of rectangular construction. Be this as it may, by careful attention to the width of mouth of the latter pattern of stop, a tone quality may be obtained practically indistinguishable, even by trained ears, from that of the other. Triangular pipes are very troublesome to make. In instruments by Messrs. Forster & Andrews triangular Hohlfötes, made to Schulze's scale, of great excellence

are sometimes to be heard; frequently they stand in the Swell organ. There is a good triangular Piccolo at St. Thomas, Nottingham (Lloyd). A good scale for a triangular Hohlföte is:—mid. C, two sides $2\frac{1}{4}$ in.; front side (carrying mouth) $1\frac{1}{2}$ in.; mouth cut up, $\frac{5}{8}$ in. Tenor C, $3\frac{3}{4}$ in. \times $2\frac{3}{8}$ in. With the mouth on the wide side of a rectangular pipe, a good scale is:—T. C, $2\frac{1}{2}$ in. \times $2\frac{1}{8}$ in.; mouth cut up, $\frac{7}{8}$ in. There is an uncommonly good Hohlföte at Tennyson St. Wesleyan Church, Nottingham, made and voiced by Mr. Cullen, the organist of the church. Mr. Binns' Hohlflötes are also distinguished by their excellence. See also CLARABELLA, SIFFLÖTE, WALDFLÖTE.

Hohlschelle—Rohrschelle. (Ger.) Hohl = hollow; Schelle = bell. 8 ft. Either (1) a large-scaled Rohrflöte; or (2) a variety of Quintatön made of Rohrflöte pipes.

Hol-Flute—See HOHFLÖTE.

Hole-Flute—See HOHFLÖTE.

Holtzbass—16 ft. An ordinary open wood pedal stop. Lucerne Cathedral. See HOLTZFLÖTE.

Holtzflöte—(Ger.) Holtz = wood. 8 ft.

Seidé尔 pertinently remarks, "It is rather an indefinite name, which might be applied to several kinds of Flutes. It is a register without any particular advantage or striking quality." An ordinary combinational wood Flute.

Horizontal Tuba—A Tuba with pipes horizontally placed. See FAN TUBA.

Horn—8 ft.

Introduced by Renatus Harris (*junr.*, if such a person ever existed) at St. Dionis, Backchurch (1724), as French Horn. Later by Bridge at Christ Church, Spitalfields (1730) and St. Anne, Limehouse (1741). The Horn was imitative of the old French Hunting Horn (see WALDHORN). Whilst formerly, no doubt one of the most successful examples of orchestral imitation of the early builders, it has, like other such stops, fallen into what may be regarded as unimitative organ tone. It differs only from the Cornopean in a slightly increased scale and freedom of tone, though now it is often named synonymously therewith.

Horn Diapason—8 ft. Usually in the Swell organ.

The Horn Diapason is a slotted Diapason of horny and sometimes somewhat "sugary" and cloying tone. It possesses rather more body than the Geigen Principal or Violin Diapason, though it is often named synonymously with this stop. The quality of tone rapidly becomes wearisome to the ear. The Horn Diapason appears to be more or less an outcome of a recognition of the fact that a Diapason of the ordinary type (but see DIAPASON PHONON) is not successful in a swell box. If the type of tone be required, the Geigen Principal is decidedly preferable.

HORN GAMBA—See FUGARA.

Hörlein—*Lein* is a (Ger.) diminutive suffix.

The Hornlein is either (1) a small 8 ft. reed (*e.g.*, Lucerne); (2) an octave Horn; (3) A Spitzflöte; or (4) a Nachthorn.

Humana—See VOX HUMANA.

Humangedackt—(Lat.) Humanus = human. 4 ft.

A sweet-toned Gedackt, supposed, presumably, to represent a clear treble voice. St. Gertrud, Hamburg.

Hummel—Hümmelchen. (Ger.) Hummel = humming; *chen* is a diminutive suffix, corresponding to (Eng.) *kin* (*e.g.*, mannikin).

A device for causing two of the largest pipes in the organ to speak simultaneously, originally with the intent of summarily arousing such poor mortals as succumbed to the frailties of the flesh and snored in the sermon. Were some enterprising builder to revive this stop in our own time, no doubt his services would be much in request. See also EFFETS D'ORAGE, DRUM PEDAL. Later "a drone bass, either C and F, or C and G" (Matthews).

I.

Infra Bass—(Lat.) Infra = below. See SUB-BASS.

Inverted Languid, Pipes with.

A pattern of pipe, the languid of which is set in reverse position, upside down. The chamfered side of the languid is thus underneath, not above. Herr Voit of Durlach once informed the author, that pipes so constructed had occasionally been utilized in Germany, when it had been desired to imitate the tone of the old builders. In this country the idea has been conceived independently by Mr. Herbert Norman (Norman & Beard), in his Corno Flute (*q.v.*). Diapasons with inverted languid, of very full and firm tone, have also been made by this firm. The inversion of the languid seems to have the effect of casting the wind more inside of the pipe. Gedackts are sometimes, though very rarely, provided with thin languids but slightly chamfered. The effect of this treatment is somewhat similar to that of the Inverted Languid. There is a Gedackt so made at Hucknall Torkard, Notts. (Musson & Compton).

Section of metal pipe, showing Ordinary Languid.

Section of metal pipe, showing Inverted Languid.

Inverted Mouth, Pipes with.

The mouth of a flue pipe is said to be inverted when the chamfering or bevelling of the upper lip, instead of being executed on the outside of the pipe as ordinarily, is on the inside, the outer face remaining level. The Vienna Flute furnishes a good instance of the use of the inverted lip, the mouth having the appearance of a simple circular orifice, partially covered, perhaps, by the cap. Inverted mouths are frequently applied to Flute stops. Generally speaking, the tone of pipes so treated partakes more of the orchestral imitative quality than that of pipes with the ordinary pattern of mouth. The distinctive attack or "piff" accompanying the speech of pipes with the inverted mouth, even though disguised as skilfully as possible, soon becomes wearisome. On this account, inverted mouths are better eschewed so far as unison Flutes constantly in use, such as Great organ Clarabellas, Hohlfloutes, and Waldflutes, are concerned (see WALDFLÖTE). The same objection does not apply so forcefully to octave Flute stops. For illustrations, see FLAUTO TRAVERSO.

J.

JEU—(Fr.) = Stop.

Jeux d'Anches = Reeds. Jeux de Fond = Foundation stops.

JUBALFLÖTE—Jubal. Jubal, "the father of all such as handle the harp and organ."—Genesis iv. 21. 8 ft. ; 4 ft. ; 2 ft.

A Doppelflöte of some power; usually of open pipes. St. Paul, Frankfurt (Walcker, 1833). During the recent rebuild of this organ, in 1899, a mistake occurred in the "tubing" of the Tibia and the Jubalflöte, the result being that the Jubalflöte is now controlled by the stop labelled Tibia.

Jula—An 8 ft., or Quint, Gemshorn. Also a corruption of Jubalflöte.

Jungfern-Regal—See REGAL.

K.

Kälber-Regal—See REGAL.

Kalliope—In classical mythology Kalliope was the Muse of epic poetry.

Applied to an organ stop, the name is particularly unfortunate, serving as the word does in America to designate *steam* organs sometimes employed at fairs, and the steam whistles used on board ship. 8 ft. ; 4 ft.

The Kalliope, which was invented by Mr. Hope-Jones, was composed of stopped pipes of exceedingly large scale. The tone was hollow and

peculiar, with a beautiful "bloom" in the tenor and middle octaves. There was an example in the first Hope-Jones organ at St. George, Hanover Square, W. *Scale*—Kalliope, 4 ft. tone. CC, 4 in.; T. C., $2\frac{1}{2}$ in.; Mid. C., $1\frac{7}{8}$ in. Mouth bearded, and the upper lip left as low as possible without the stop developing into a Cor de Nuit.

Kammer—In old German organs a term signifying that the stop to the name of which it was prefixed was tuned to "Kammerton" (chamber tone), a tone in pitch below "Chorton" (choir tone). Such stops (Kammerflöte, Kammergedackt, etc.) were tuned a tone lower than the rest of the organ and used for instrumental accompaniment.

Keraulophon—(Gr.). *κέρας* = horn; *αὐλός* = pipe; *φωνή* = voice. 8 ft.; abroad also 16 ft.

On the Continent, a variety of Bassett Horn, the English Keraulophon being quite unknown. The Kuerlofon sometimes found in Spanish organs (e.g., Seville Cathedral, Aquilino Amézua) is probably a cross between a Dolce and a Salicional, or merely a species of Waldflöte. The English stop was invented by Gray & Davison, and first inserted in 1843 in their organ at St. Paul, Knightsbridge, W. The story runs that the stop was fortuitously discovered through a man who was carrying some pipes on his shoulder knocking one on to a nail, and so piercing a hole at the top. This, of course, is mere hearsay, but "*se non è vero, è ben trovato.*" Dr. Hinton (Catechism of the Organ) gives the reputed inventor's name as William Horn, without, however, detailing the circumstances above mentioned. The Keraulophon is of large Dulciana scale, the peculiar feature of the pipes being a round hole or slot of fair size in the pipe about one diameter from the top. It is tuned with a slide, through which the hole sometimes extends. The Keraulophon emits a peculiar soft and muffled tone, though some builders erroneously make it as loud as a powerful Gamba. It is one of the few stops legitimately "horny" in character. The pipes, being very delicately adjusted, are readily thrown off their speech by dust, whilst great difficulty is also experienced in a small swell box in causing them to "stand" well and speak without fluctuation or "wobbling." The stop is to be found in many of Messrs. Gray & Davison's organs, but it is rapidly becoming obsolete.



Keraulophon

Kerophone—(Gr.) *κέρας* = horn; *φωνή* = voice.

In the organ at the Colston Hall, Bristol (Norman & Beard, 1905), occur three stops named Kerophone, Harp Æolone and Saxophone, respectively. These stops are composed of free reeds, of 8 ft. pitch, with very broad tongues and no pipes. They are under the control of an expression device (Gale's patent), whereby every shade of power can be instantly obtained, either for accenting a single note or a whole chord. These stops add considerably to the "wood-wind" resources of this organ. A patent tuning device enables them to be rapidly tuned.

KINURA—(Gr.) *κινύρα*. Akin to the Hebrew "Kinnôr" (Harp) mentioned in Genesis iv. 21. The Kinura was a harp with ten strings. 8 ft.

Invented by Mr. Hope-Jones. The original experiments in the construction of this stop were conducted with cylindrical brass tubes continued through the block and forming the shallot or reed. They were made of brass tubing, with a long "flat" filed through a considerable part of one side. On to this was soldered a brass plate, against a slit in which the tongue was seated. In other cases this shallot extended about one-third the distance up into the reed tube. The bore at middle C was about $\frac{1}{4}$ in. diameter; but the tongues were so thin that it was practically impossible to complete the compass. Eventually the stop was made like the Oboe, or of small-scaled half-length tubes, pierced at the top and surmounted by an adjustable hood-shaped lid. The tone of the Kinura is not impressive. It has variously been described as resembling a badly voiced Oboe, a "bee in a bottle," or even a concertina! McEwan Hall, Edinburgh; Aberdeen University; Heaton Parish Church, Bradford; Hoylake Church, Birkenhead; Kinnoull Parish Church, Perth (Hope-Jones).

KLARINETTE—(Ger.) = Clarinet.

KLEIN—(Ger.) = Small. A prefix indicating octave pitch. Thus, Klein Terz = Octave Tierce. Sometimes, however, the prefix signifies "small-scaled."

Klein-Gedackt is used in both these senses—in the latter sense as opposed to Stark-Gedackt and Mittel-Gedackt.

Klein-Regal—See REGAL.

Klingel (Ger.) = bell. A bell communicating, as a signal, with the blower.

Knopf-Regal—See REGAL.

KONTRA—(Ger.). See CONTRA.

Kontrabass—See Contrabass.

Kopf-Regal—See REGAL.

Koppel—See COPPEL.

KRUMMHORN—See CLARINET.

Kurzeflöte—(Ger.) Kurz = short. Akin to the Zwergpfeife (dwarf-pipe) or Piccolo.

Kuzialflöte—Kutzialflöte. 4 ft.; 2 ft.; 1 ft.; and Mutation.

An open wood Flute of bright tone. The pipes were of small scale. St. Dominico, Prague. Kreuzkirche, Dresden, 1½ ft.

L.

Largior—An ancient name for the Schwiegel.

LARIGOT—Octave Twelfth, Super-octave Quint, Nineteenth, 1½ ft.

A Mixture rank speaking at the interval of a Nineteenth above the unison. Formerly, like most Mixture ranks, it drew as a separate stop. The Larigot was often of very shrill tone, the pipes having wide mouths.

Leathered Lip, Pipes with.

The process of "leathering" is a process of treating flue pipes extensively employed in *modern* organ building. The *modus operandi* is simple. It merely entails the fixing of a strip of leather to the upper lip of a metal or wood pipe by means of "Seccotine" or liquid glue, the leather being doubled round, and rising to one side of the lip about 1½ in. or 2 in. in the case of fair sized pipes. The process affords a simple means of procuring a solid, thick, and smooth lip, and it must not be supposed that the leather *per se* is responsible for the improved results obtained. Such treatment imparts an unrivalled fullness and pervading quality to the tone, without necessarily rendering it flutey or dull. The method is exceptionally valuable as a means of increasing the efficiency of old pipes, though, needless to add, it requires considerable care and discrimination in application. Diapasons, Flutes, and a certain type of Quintatön can be voiced to advantage with leathered lips. The author has heard even old Geigen Principals rehabilitated by this treatment, when it has been desired to increase their body of tone. See also DIAPASON (section 6) and TIBIA.

Liebesgeige—(Ger.) Liebe = love; Geige = Violin. See VIOLE D'AMOUR.

Lieblich—(Ger.) = lovely.

A prefix betokening softness and sweetness of tone.

Lieblich Bordun—Lieblich Bourdon (*sic*). 16 ft.

A small-scaled, soft-toned Bourdon usually in the Swell organ. It is sometimes found on the Pedal organ, maybe borrowed from the Swell.

Lieblich Flute—(Ger.) Lieblich Flöte. 4 ft.

An octave Lieblich Gedackt.

Lieblich Gedeckt—Lieblich Gedackt. See GEDECKT, ROHRLÖTE, CONE GEDACKT 8 ft.; also 16 ft.; 4 ft.; rarely 2 ft.

For 16 ft. and 4 ft. varieties see LIEBLICH BORDUN and LIEBLICH FLÖTE, respectively.

A 2 ft. instance, stopped to the top note occurs on the Choir organ at Ripon Cathedral (Lewis, rebuilt by Hill).

The Lieblich Gedeckt is of quieter, brighter and less thick tone than the Gedeckt or so-called Stopped Diapason. It was introduced into this country in Schulze's 1851 Exhibition organ, and the beautiful, mellow quality of its tone caused a great sensation at the time. The stop was quickly raised to perfection by Willis and Lewis. At the present day it is used by all English builders, but in too many cases the pristine purity of its tone has disappeared, and a disagreeable "commercial" standard of Lieblich has sprung into existence. The name is, in England, sometimes applied to stops of *wood*, though it is now usually made of metal, with pierced wooden stoppers lined with cork (as introduced by Willis). In Germany stopped metal pipes are still provided with the sliding "canister" tops illustrated under "Rohrlöte." Metal Gedeckts are generally continued by wood basses. In the Hope-Jones organs, however, the Lieblich Gedeckt basses are almost invariably of metal. The subjoined are good scales for a Choir organ Lieblich Gedeckt: C C, $3\frac{1}{4}$ in., cut up $1\frac{7}{8}$ in.; Mid. C, $1\frac{1}{8}$ in., cut up $\frac{1}{8}$ in. Metal bass, stoppers pierced in the treble: (Hope-Jones). C C, 4 in. \times 3 in., cut up $1\frac{1}{2}$ in. (Willis, and others). C C, 3 in. \times $2\frac{1}{4}$ in., cut up $1\frac{5}{8}$ in. (Lewis). C C, $2\frac{3}{8}$ in. \times 2 in., cut up $1\frac{3}{4}$ in. (Bishop). Most English builders use basses measuring at C C 4 in. \times 3 in., or $3\frac{1}{2}$ in. \times $2\frac{1}{2}$ in., for all purposes, whether the treble be a Gedeckt, Stop. Diapason, Lieblich Gedeckt or Rohrlöte. It is a vicious practice, but one very generally adopted.

Lieblich Gedeckt (metal), with wood stopper.



Lieblich Gedeckt (metal), with pierced wood stopper.

LIEBLICH GESCHALLT—(Ger.) Schallen = to echo. 8 ft. Invented by Mr. Hope-Jones.

A very small scaled Echo Lieblich Gedeckt. C C, $2\frac{1}{2}$ in.; mid. C, $\frac{7}{8}$ in. Parkgate School, Cheshire (Hope-Jones). Kinnoul Church, Perth, N.B.

Litice—**Lituus**. (Lat.) = “a kind of crooked Trumpet, uttering a shrill sound, a clarion” (Adams). A Zink or Krummhorn.

Lleno—(Sp.) = Mixture. (Sp.) *Lleno seis renglones* = Mixture VI ranks.

Locatio—An ancient name for Mixture. (Lat.) = a letting or lease. Loculatus, however, = a box or chest of drawers with a number of small distinct divisions. Perhaps some affinity is traceable, as the latter word aptly describes the soundboard arrangements of a Mixture stop. The name may, however, be related to (Lat.) *loqui* = to speak.

Lute—A stringed instrument, Lute, was inserted as an organ stop by Schwarbrook, at St. Michael, Coventry (1733).

M.

Major Bass—Great Bass. (Pedal) Open Diapason. (Ger.) Prinzipalbass. 16 ft. These names are also sometimes applied to pedal stops of 32 ft. pitch. See DOUBLE DIAPASON.

The principal Pedal organ stop, commonly known as Open Diapason. It would seem scarcely accurate to apply this name to a stop which so frequently is what the Rev. Sir Frederick Ouseley termed, “a huge toneless Clarabella.” When the GG organs were converted to the CC compass, one set of huge scaled wooden “Pedal Pipes” was expected to do duty alike for loud and soft combinations. With the previous extended compass, manual stops had each possessed a bass on the manual itself, and the alteration should, therefore, have been attended by a corresponding transference of such manual basses to the pedal. Apparently, however, the esoteric principles underlying the change were never really grasped, the ultimate result being that the organ was deprived of its sympathetic basses. There is a stop of the kind under notice at St. Barnabas’ Cathedral (R.C.), Nottingham (Gray & Davison), the CCC pipe measuring internally no less than 17 in. x 15 in. The marvellous progress the art of organ building in this country has, of recent years, made, has been accompanied by a truer appreciation of the function of the Pedal organ. The provision of a larger number of pedal stops, soft as well as loud, has been in no small measure due to the efforts of Mr. Thomas Casson. English builders as a whole, in comparison to the Germans, do not seem to excel in their treatment of pedal stops. The modern Major Bass is a stop to which little care and attention is devoted, and which consequently is, as a rule, disappointing in effect, being windy in the bass and unduly hard in the treble. In organs of moderate size a somewhat stringy Major Bass or a Violon will probably be found more useful and effective than the heavier type of tone sometimes affected. Irregularity of tone in a Major Bass is

frequently due to acoustical influences. It may often be remedied by causing the pipes to speak against a reflecting surface.

Major Flute—8 ft.; 16 ft.

A powerful combinational 8 ft. Flute, usually found on the Great, Solo, or Pedal organs. The name is sometimes applied to the Tibia Plena, and occasionally to an open Flute Double.

{ **Megalopente**— $10\frac{2}{3}$ ft. tone.

{ **Megalophone**—32 ft. tone. (Gr.) *μέγας* = great; *πέντε* = five; *φωνή* = voice.

Two stops bearing these names occur on the Pedal organ at the Coliseum, Boston, U.S.A. (Wilcox & Co.). They are fancy names for a Quint and 32 ft. Acoustic Bass effect, respectively.

MELODIA—8 ft.; also 16 ft.; 4 ft.

A stop employed in America, corresponding either to our Waldflöte or Hohlflöte. In tone it frequently resembles the Waldflöte, as made so excellently by Messrs. Walker.

Melodic—*e.g.*, Melodic Flute, Melodic Diapason, Melodic Viol.

A prefix signifying that the stop so described speaks on a "Melody Attachment." The latter is a device, the operation of which silences all the notes of the chord played on the particular manual or stop to which it is attached, with the exception of the treble one. In its inversion it may be employed to silence all except the bass note of a stop or stops, and thus render possible pedal bass effects from a manual. The melody attachment, as applied to the harmonium, was invented by Dawes, and patented by him under the name of Soprano Coupler in 1864. The reverse effect, the double bass coupler, was patented by Dawes & Ramsden in 1868. Similar contrivances were applied to the harmonium by Howard, and Mason & Hamlin. The Melodic Coupler was first adapted to the organ by Mr. Thomas Casson, whose "Positive" organs (of the larger pattern) normally possess a double bass stop acting from the lowest note struck, and also a melodic stop reinforcing the treble note. Devices of this kind, which have since been largely employed by other builders, are not merely valuable in small organs, but also serve to augment the resources of instruments of greater size. Attached to the Solo organ, a melodic coupler admits of many novel effects, particularly in music of the "leit-motif" type, virtually endowing the performer with a third hand. Thus a Tuba may be coupled melodically to another manual, both hands being employed on the latter in accompaniment. It would be similarly useful in such a piece as Guilmant's "Hymn of the Seraphs," in which the melody is taken by the right foot on the Pedal organ. Attached to large instruments it may be seen at: London Organ School; Cathcart

House, South Kensington, W. (Positive Organ Co.); St. Paul, Aix-la-Capelle (Aachen), (Stahlhuth). Mr. R. S. Rutt, of Leyton, has also patented an ingenious "part-singing" soundboard, by means of which it is possible to isolate or combine together any of the individual parts of four-part harmony on the given stop or manual to which it is applied. A somewhat similar contrivance has also been designed by Mr. Casson. The Double Touch is another device, admitting of the accentuation of isolated notes.

Melophone—(Gr.) $\muέλος$ = song; $\phiωνή$ = voice. 8 ft.

(1) A string-toned stop of very delicate intonation. Bridlington Priory Church (Anneessens, of Belgium). (2) A speciality of the Kimball Organ Co., consisting of a metal cylindrical flue pipe, of Violin Diapason scale, speaking two qualities of unison pitch at one and the same time, viz., String and "Open Wood." In other words a string-toned Flute. Washington Temple, U.S.A. (Kimball Co.). See also Vox HUMANA, 16 ft.

Menschenstimme—(Ger.) Mensch = man (Lat. *Homo*); Stimme = voice. See Vox HUMANA.

Merula—(Lat.) = blackbird. See AVICINIUM.

Messing-Regal—See REGAL.

METALLIC, STOPPED—Also Metallic Flute. 8 ft.; also 4 ft.

The organ built by Schulze for the 1851 Exhibition was remarkable for the exquisite quality of its Gedeckt stops. It is traditionally reported that the pipes of this instrument were not open to public examination. Bishop, the celebrated organ builder, was so impressed with the tone of these Gedeckts that he endeavoured, after careful listening, to imitate it. By dint of much experimenting he succeeded to his satisfaction in doing so. He employed wooden pipes of the ordinary rectangular shape outside, but, above middle C, internally of cylindrical form. When, sometime later, Messrs. Bishop had Schulze's organ through their hands, it was found that the Stopped Metallic was really a very faithful representation of the original Gedeckt tone. Shortly after Bishop's attempt, Schulze enlarged the organ at the Temple Church, London, and in the most liberal manner he permitted other builders to examine his pipes. It was then discovered that his Lieblich Gedeckt, the nearest equivalent to which had hitherto in England been made of wood, was of metal. As it was then found easier to employ metal pipes, the use of the Stopped Metallic was discontinued. The Metallic Flute was a stop, generally of open pipes, voiced on similar lines. Bishop's German Flute, though made in a variety of ways, was sometimes (e.g., St. Mary, Nottingham) of cylindrical bore inside, like the metallic Flute. The German Flute was not always truly cylindrical in form. It was sometimes made of two pieces of wood,

grooved out, and then jointed up. The mouth was inverted, and the cap fixed slantwise. See also FLAUTO TRAVERSO. The author well remembers a Stopped Metallic of beautifully mellow tone at Brighton College (Bishop). Other examples were inserted at Brompton Oratory, Bombay Cathedral, etc. (Bishop).

Minerici— $2\frac{2}{3}$ ft. Merseburg Cathedral. An octave Quint.

Mittelgedackt—(Ger.) Mittel = middle. 8 ft.

A Gedeckt of medium power.

Mixture—(Lat.) *Miscere* = to mix.

Mixture stops are sometimes known by the generic name of Compound Stops, because they are *compounded* of two or more ranks of pipes, of disparate pitch. In the earlier stages of the evolution of the organ, as the instrument increased in magnitude and importance, it became customary to unite with the Diapasons, under the control of each individual key, several subsidiary pipes sounding octaves and fifths, and later thirds, to them. It was felt, no doubt, that the rather bare effect resulting from the mere duplication of octaves could, in some measure, be palliated or modified, the tone rendered of a more homogeneous character, by the introduction of fifth-sounding pipes. There is absolutely no reason to suppose that our forefathers were ignorant of the existence of the harmonic system, although Helmholtz was the first to evolve the scientific theory of the influence of overtones on tone quality. Hence the introduction of Mutation pipes may reasonably be regarded as a practical recognition of the laws of Nature, and not as mere empiricism. When, by the respective inventions of Timotheus and Agricola, facilities were afforded for the control of separate ranks of pipes by means of stop*-sliders, the principal sets of pipes were isolated, but the subsidiary ranks were lumped together on one slider, being considered, it would appear, as unworthy, or outside the necessity, of separation. In this wise originated the use of compound stops.

But presently the Mixture became subjected to a curiously artificial usage. There is some indirect evidence to show that in the period preceding the religious cataclysm, commonly known as the Continental "Reformation," the organ was not used to accompany the voices of the congregation. It was sometimes used to accompany the choir, but more often to take the place of singing altogether. It seems that it was customary for the verses of the Psalms to be taken alternately by the choir and the organ, and in the XVth and XVIth Centuries there is constant

* It is curious how the negative aspect of the process still survives in the name. The stop-slider is a mechanical device for *stopping* the ingress of wind to the pipes. The function of the stop handle was thus originally regarded as that of *silencing* a rank of pipes, not, as now, of serving to bring it into operation.

testimony to the fact that, instead of being sung, the Mass music was frequently vicariously performed on the organ. Whilst the situation was such, it was not embarrassed by the need of large organs. But the introduction of metrical hymns entirely reversed the state of affairs. There has been some difference of opinion as to whether the organ at first accompanied throughout the chorale or merely performed interludes between the verses, the tradition of which still survives in the customary pause (⊦) marks. But, in any case, the use of the organ for the accompaniment of congregational singing may be said to date from the time of the Lutheran chorale. It was soon found that for the support of such large bodies of lusty and untrained singers, inspired, as they were, by their devotional instincts, the existing organs were totally inadequate. The natural remedy would have been to augment the foundation, or sustaining, tone of the organ. But, unhappily, the adoption of this policy was not possible. Any perceptible addition of large-scaled foundation work was rendered impossible owing to the increase in size of the pallets, and hence in the weight of the touch, necessitated thereby. In this exigency it was empirically discovered that the addition of a very few ranks of Mixture work was sufficient to cause the organ to overpower large bodies of singers. This result is due, of course, to the acuteness of pitch of the Mixture work, for, as Dr. Hopkins has pointed out, the largest pedal Open Diapason will not drown the most delicate boy's voice, although one Mixture stop may do so.

Thus did mere mechanical limitations contrive to divert the true course of tonal development. For, the pattern once defined, a vast superstructure was reared on a very slender foundation. The tendency to exaggerate the "upper work" of the organ reached a climax in the instrument built by Gahler, in 1750, for the Monastic Church at Weingarten, near Ravensburg. This organ comprised no less than ninety-five ranks of Mixture, including two stops of twenty-one and twenty ranks, respectively.* Towards the close of the XVIIth Century, the Abt † Vogler (1749-1814) came forward with his "Simplification System," one feature of which consisted in the abolition of excessive Mixture work.‡ The worthy Abbé, who was a capable theorist and a gifted player, and possessed of an eccentric, and therefore attractive, personality, secured

* In our own country there is a XIV rank Mixture, still extant, in the organ at Edinburgh University.

† Immortalized by Browning. Abt (Fr. Abbé) is a term used to denote, amongst other connotations, a cleric without a charge or cure of souls.

‡ The other features of this system of organ building were (1) the substitution of Acoustic basses for 32 ft. stops; (2) the semitonal plantation of pipes; (3) the introduction of free reed stops, exploited by Vogler in conjunction with a St. Petersburg builder named Kratzenstein (see FREE REED).

many followers, who preached a crusade against Mixture work. The success of the movement can well be measured by the amount of apologetic literature it called forth, and by the fact that it stirred the theorists up to ponder for themselves what really *was* the function of the Mixture. Setting aside the somewhat abortive attempts at lightening the touch of organs by the employment of "split pallets" (which affected the tonal development of the organ in no appreciable manner), it may be said that it was not until the introduction of pneumatic actions that the decline of Mixtures became at all widespread. Even then the movement was virtually confined to English organ building. And the announcement by Mr. Hope-Jones, at the beginning of the last decade of the past century, of his complete discardment of all Mixture and mutation work, may fairly be stated to have marked a distinct epoch in the history of the controversy.* The adoption of the pneumatic action and mechanical blowing at once opened up the path for the development of large-scaled foundation work and heavy-pressure reed work. The modern builder meets the requirements of large bodies of singers, not by a fierce din of Mixture work, but by a massive volume of good sustaining foundation tone, contributed alike by Diapasons and reeds. In moderate sized organs, the most modern school of tonal design finds it possible—nay, even preferable—to dispense with even the Twelfth and Fifteenth, in favour of a soft Double reed on the Swell. And certainly the modern Diapason is well able to maintain the essential supremacy of the Great organ.

The situation, it so happens, is rather embarrassed by the fact that Mixtures do not blend well with modern foundation work. This is not due to "absurd wind-pressures" or any other of the familiar *lettres noires* of the school of old-fogeydom, which clings tenaciously to the Georgian era of organ building. It is simply due to the fact that if a respectable foundation be added to an organ which is all "top," the "middle" will be found wanting, and its absence will cause a horrid lacuna, or gap, in the tonal structure, analogous to that in the familiar "piccolo and big drum" effect. The sole way to make powerful Mixtures "blend" in the organ is to substitute for Diapasons something which, for want of more appropriate

* My reasons for making this seemingly rather controvertible statement have to do with the work of developing the foundation work of the organ, which Mr. Hope-Jones made peculiarly his own. Personally, I do not favour the total abolition of Mixture work, save in small organs. With regard to Mr. Hope-Jones' work, let me here, in order to meet any possible misunderstanding, seize the opportunity of defining my attitude—quite in an impersonal spirit. Briefly, there is a great deal which is simply magnificent; there is also that which I cannot but regard as rather exaggerated and overdone. The Hope-Jones organ may often have strayed far from the razor-path of perfection. But I set Mr. Hope-Jones' tonal ideals far above even his work. I consider them truly "epoch-making" (as the Germans forcibly put it), the true complement to the work of "Father" Henry Willis.—J. I. W.

words, may be described as a hybrid between a Diapason and a Gamba. Diapasons are sometimes slotted in order to cause them to unite better, so it is claimed, with the "upper work" of the organ. Truly a most efficacious process, for the simple reason that this slotting removes much of the obstreperous foundation tone! The Georgian school, which favours the "shrieking apparatus," Dulciana-toned Diapasons, and gim-crack reeds smacking of the merry-go-rounds, may well be left to the digestion of its own disordered fancy. It may truly be said that the watchword of the most advanced organ building—as of voice-production—is *purity of tone*, and one of the chief reasons for the disappearance of powerful Mixture stops is the fact that the presence of such pipes, each with its own attendant series of harmonics, is inimical to the due realization of this ideal. The modern plan is to build up as much of the necessary brilliancy of the organ as possible from *within* the foundation. There is absolutely no necessity for the Mixture in small organs.* Quite sufficient brightness of tone, without undesirable prominence, is contributed by the keen string tone and octave couplers on the Swell. And as the size of the instrument increases, the greater part of the brilliancy can be built up internally by secondary Diapasons, Quintatöns and high-pressure reeds as well. In large organs the Mixture serves a two-fold purpose. Its function is to furnish harmonics supplementary to the ground tone, to corroborate the natural harmonics in this capacity, and also to serve as a "*timbre-creator*." "Even the orchestra, according to Dienel, cannot quite do without artificial harmonics, considering that the strengthening by unisons and octaves is nothing more nor less than the skilful utilization of harmonics or partials, such as the 4 ft. and 2 ft. stops of the organ produce."† The *timbre-creating* office of the Mixture is based on the same motive which prompts the voicing of the Principal 4 ft. louder than would be demanded were the stop merely an artificial harmonic. But there is no justification in this for powerful dominating Mixtures. The Principal may justly be said to *extend* the Diapason tone in the same manner as a vibrating bell extends its tone when struck more forcibly. But higher than the Principal the analogy scarcely seems to hold so good; the tone of the Great organ up to the Fifteenth is not so homogeneous as that of a bell; the Fifteenth does not extend the Principal in the same manner and to the same degree, as does the Principal, the Diapason.

One of the greatest mistakes of all, in English organ building, has been the whittling down of the Mixture to a mere "three-rank shrieking.

* Not, of course, that there can be any possible objection to an artistically-treated Mixture in a small organ, save in so far as it replaces stops of greater general utility. See "Tonal Design in Modern Organ Building," pp. 6-13.

† Locher. *Organ Stops*, p. 38.

apparatus."* Had the liberal composition been preserved concurrently with a decided reduction in power, the result would have been far less disagreeable. As matters stand, the very bareness of the routine III-rank stop serves but to emphasize its assertiveness. In any organ, a V or VI rank Dulciana Mixture, artistically treated, would be far less assertive than the conventional III-rank stop. If the Mixture is to be retained at all, let it boast some character, let it serve adequately its twofold office. Most certainly, unless it can be made better than it usually is, let it be suppressed altogether and placed together with the Cymbalstern, Cuckoo, etc., on the retired list.

English builders generally have discarded the Tierce rank as incompatible with the intervals of equal temperament.† It is true that the system of equal temperament demands some subdual of the power of Mixtures, but, regarded in the light of artificial harmonics, there is no argument which can be levelled against Mixtures which cannot likewise be brought to bear against natural harmonics. But it is not Nature which is in the wrong, it is our arbitrary system of dividing the octave into twelve notes. One American pamphleteer sets out with great display to vanquish the Mixture by tabulating the gruesome discords produced when a given chord is sounded.

When to this is added the conflict between the perfect thirds and fifths of the compound stops, and the intervals of equal temperament with its sharp thirds and flat fifths, the resultant cacophony appears, *on paper*, simply appalling! But the whole argument is a specious *reductio ad absurdum*.

* Whatever may be one's opinion of the famous old Continental organs—such, for instance, as Silbermann's Dresden instruments—one thing can always be urged in their favour, and that is the magnificent blaze of tone. Of course, this result can only be obtained at the sacrifice of what we hold more precious—massive Diapason tone—and such Mixture work cannot be endured for any protracted period of time. But it is altogether preferable to the bare English work, neither tolerable nor imposing.

† Mixture ranks are tuned to pure intervals. A Tierce, for instance, sounds a pure seventeenth above the Diapason. Whereas, on the keyboard, the interval of a seventeenth is far from pure, owing to the system of tuning according to equal temperament. The fact, that the discord is more noticeable in the case of thirds than of fifths, accounts for the special antipathy displayed towards the Tierce.

ad absurdum. *Precisely the same discordant sounds, as are indicated above, are generated by the harmonics of the chord themselves.* But such harmonics, and the artificial harmonics of good Mixtures, are altogether subservient to the prevailing notes of the chord. And as regards the equal temperament difficulty, there is the same clashing of harmonics whenever a minor Triad is sounded.* On this score, no objection can validly be urged against duly subordinated Mixture tones which does not in some measure, hit at the whole basis of our musical system. Similarly, it is precisely in so far as compound stops are intended to corroborate natural harmonics that they are able to withstand the theoretical academic charges of sedulously giving rise to consecutive fifths.

At the period when compound stops were at their zenith, there were various names given to them, each strictly indicating a certain definite disposition of ranks. Such names were: Sharp Mixture, Acuta, Furniture, Cymbal; Quint Mixture, Plein Jeu, Full Mixture; Sesquialtera; Grave Mixture, Quarte, Quarte de Nazard, Rauschquinte, Rauschpfeife; Tertian, Sexte; Cornet, Mounted Cornet, etc. It would serve no useful purpose to append the constitution of all these in detail, suffice to say, that those between the several semi-colons are, more or less, cognate, and that the more important are described in this work under their own title.

In treating full-toned Mixtures the secret of success lies in keeping the octave ranks bright, and the quint ranks dull and free from their own harmonics. Mr. Compton, of Nottingham, has voiced some remarkable Mixture stops, employing rather large-scaled pipes furnished with mouths of singularly small width. In this manner he has secured a tone of full quality, free from too ample harmonic development, yet subdued in power. It is obvious that Mixture pipes would be too small to be continued with efficiency right through the compass. "Breaks," or returns, to a lower pitch, are, therefore, introduced at such positions in the compass as shall render the change least perceptible. The abruptness of the break in the ordinary Mixture is far from pleasant. Preferably, each rank should break back on a different note. Mr. Compton has consistently designed his breaks in this manner, and Mr. Casson has worked on the same plan at the London Organ School, and elsewhere. The power of the different ranks, as they progress through the gamut, requires, also, careful regulation. If a low pedal note be depressed, with the Great or Swell organ up to Mixtures coupled, the balance is not usually pleasant, generally for the reason that the lowest pipes of the Twelfth are too obstreperous. Albeit this test is a severe one, and it

* The "Tierce de Picardie" is an attempt to escape one of the most serious of these dissonances. It is open to question whether the abrupt change of tonality is not a far worse evil. The final tonic minor Triad has an ineffable potency and transcendentalism of tone,

would seem scarcely possible to satisfy it, since Mixtures are indisputably more fitted to the full-chord style of playing, and are best pushed in when giving out single notes in the bass portion of the compass. One of the most satisfactory Mixtures the author ever heard was in a small organ by Weigle, in the Y.M.C.A. Hall at Stuttgart. It was a string-toned Mixture. Viol Mixtures are most certainly not practicable, they are too liable to be disturbed by the accumulation of dust; but Geigen Mixtures can be made with eminently satisfactory results.

Briefly, then, the Mixture of the future requires to be bold in its initial scheme, but subdued in power. It requires to be artistically toned throughout the compass, and not left to "run amok," as are most modern specimens. If it is to be inserted at all, it is worth some care. Far from being a work of art, it is now a mere commercial adjunct. And—strange that it should be necessary to say so—when once made it requires to be tuned. The majority of Mixtures are not even properly *tuned* much less *regulated*, from one year's end to the other. From the action of some builders, who plant a Mixture between two 8 ft. stops in the middle of a Swell soundboard, it might even be inferred that Mixtures were automatically self-tuning.

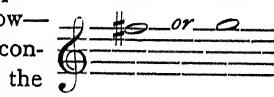
Subjoined are various schemes for compound stops. For the sake of convenience the breaks of all the ranks are given on identical notes. Little ingenuity will be required so to dispose the ranks as to break on different notes:—

(1) *Small Organ*—Swell Mixture. (a) Grave Mixture, 12th and 15th throughout.

(2) *Small Organ*—Swell Mixture. Pre-supposing an independent 15th. CC to F#, 43 notes: 12, 17, 22. 12th moderate, 22nd bright, 17th very quiet. G to top: 8, 12, 15.

(3) *Scheme for full complement of Mixtures on a large organ.* Great. Pre-supposing an independent 12th and 15th. (a) First Mixture, CC to F#, 43 notes: 15, 17, 19, 21, 22. G to top: 1,* 8, 8, 12, 15. (b) Second Mixture. CC to top: 5, 10, 12, 15. 12th and 15th to predominate.

Swell Mixture. Pre-supposing 4 ft. stop, and Piccolo. (a) First Mixture. CC to B, 48 notes: 12, 15, 19, 22. C to top: 1, 8, 12, 15. All fairly powerful. (b) Second Mixture. CC to F#, 43 notes: 5, 10, 17, 21, 22. G to top: 1, 5, 8, 10, 15.

The above Mixtures are designed on the principle that no Mixture should break in the first three-and-a-half octaves, *i.e.*, below— and consequently the ranks which cannot be continued up so far ought not to be introduced in the bass. The Twenty-second is thus fixed as the highest rank in the bass.

* 1 represents unison, 8 octave.

Another maxim here followed (Swell Mixture, *a*) is that the Quint is not to be introduced in the upper portion of the compass unless used throughout. The same applies to other odd-numbered partials of the 16 ft. tone. Readers will notice that the Tierce and Flat Septime (*g.v.*) are incorporated in these schemes. Scheme No. 4 is planned on altogether different lines. It represents the Mixture schemes used by Messrs. Norman & Beard, the celebrated Norwich firm, at Westminster Roman Catholic Cathedral, London (Temporary Sanctuary Organ).

(4) Great organ. CC to F \sharp , 19 notes: 15, 19, 22. Fid. G to C, 18 notes: 8, 12, 15. C to top: 1, 8, 15.

Swell Organ. CC to F \sharp : 15, 19, 22, 26, 29. Fid. G to C: 8, 12, 15, 19, 22. C to top: 1, 5, 8, 12, 15.

The next scheme, No. 5, is that of the Great Organ Mixture at the London Organ School, Princes Street, W. (Positive Organ Co.). It was designed by Mr. Thomas Casson and his colleague Mr. Raeburn Andrew, M.A. There is a separate Twelfth and Fifteenth, the soundboard is also carried up for an extra octave to accommodate the octave coupler. The —4 refers to a rank which actually runs a fourth below the unison. It is a twelfth to the manual 32 ft. tone (Dolce, 32 ft.)

With Octave Coupler Drawn.

CC	... 15	...	17	...	19	... 7	21	...	22	...	22	...	24	...	26	... 7	28	...	29
FF \sharp	... 15	...	17	...	19	... 7	21	...	22	...	15	...	22	...	24	...	26	...	28
C	... 15	...	17	...	19	... 7	21	...	22	...	15	... 7	21	...	22	...	24	...	26
F \sharp	... 8	...	15	...	17	...	19	... 7	21	...	12	...	15	... 7	21	...	22	...	24
C \sharp	... 8	... 7	14	...	15	...	17	...	19	...	12	...	15	...	17	... 7	21	...	22
F \sharp	... 5	...	8	... 7	14	...	15	...	17	...	12	...	15	...	17	... 7	21	...	22
C \sharp	... 5	...	8	... 7	14	...	15	...	17	...	8	...	12	...	15	...	17	... 7	21
F \sharp	... 5	...	8	... 7	14	...	15	...	17	...	8	...	12	...	15	...	17	... 7	21
G \sharp	... 5	...	8	... 7	14	...	15	...	17	...	8	...	12	...	15	...	17	... 7	21
A \sharp	... 5	...	8	... 7	14	...	15	...	17	...	8	...	12	...	15	...	17	... 7	21
C \sharp	... 1	...	5	...	8	... 7	14	...	15	...	5	...	8	... 7	14	...	15	...	17
D	... 1	...	5	...	8	... 7	14	...	15	...	5	...	8	... 7	14	...	15	...	17
F \sharp	... 1	...	5	...	8	... 7	14	...	15	...	5	...	8	... 7	14	...	15	...	17
G	... 1	...	5	...	8	... 7	14	...	15	...	5	...	8	... 7	14	...	15	...	17
G \sharp	... 1	...	5	...	8	... 7	14	...	15	...	5	...	8	... 7	14	...	15	...	17
A \sharp	... 1	...	5	... 7	7	...	8	...	10	...	5	...	8	... 7	14	...	15	...	17
C \sharp	... —4	...	1	...	5	... 7	7	...	8	...	10	...	12	...	15	...	17	...	19
D	... —4	...	1	...	3	...	5	... 7	7	...	8	...	10	...	12	...	15	...	17
G	... —4	...	1	...	3	...	5	... 7	7	...	8	...	10	...	12	...	15	...	17

MONTRE—16 ft., 8 ft. (Fr.) Montre = show, shop window.

A French name for Diapason, originating with the fact that the stop frequently formed the “show-front” of the organ.

Mounted Cornet—See CORNET.

Mundflöte—(Ger.) Mund = mouth. 2 ft. Equivalent to Flaut-à-Becq. Königsberg Cathedral.

MUSSETTE—8 ft. ; sometimes 16 ft. ; 4 ft.

The Musette is a development of the ancient Chalumeau, and was originally said to be imitative of the Bagpipes. Though not uncommon in France, the stop is rarely to be met with in this country. Its tone is thin and piquant, somewhat similar in the treble to that of the Cor Anglais. The pipes of the Musette vary in shape. Generally they resemble those of the Orchestral Oboe or the Vox Humana. It is made either as a free or a beating reed. There is a good specimen of the latter type at Rugby School Speech Room (Bryceson). The figure represents a form of Musette invented by Mr. John H. Compton, of Nottingham. The pipe is capped at top, but at about one-third of the length of the pipe, measured from the top, is pierced a small round hole. The upper portion of the pipe, acting as a resonating chamber, imparts a very quaint and "pastoral" effect to the tone. The tubes, which are approximately half-length (see REED), and made of pure tin, are of very narrow scale, and the tone, consequently, is very thin and delicate.

Musicirgedackt—(Ger.) Musiciren = to make music. 8 ft.

A soft accompanimental Gedeckt found in ancient German organs.

Mutation Stop.

The term Mutation comprises those stops, the pipes of which sound at a pitch other than that of unison or one of its octaves. Such stops are: Quint, Twelfth, Tierce, Larigot, Flat Septime, Twenty-sixth, etc. In practice the name Mutation work is applied also to Mixtures, although the latter may contain such "foundation" ranks as Principal, Fifteenth, Twenty-second. See FOUNDATION STOPS.

Muted Viol—See VIOLE SOURDINE.

N.

NACHTHORN—(Ger.) = Night Horn. See COR DE NUIT.

NASAT—Nasad, Nasard, Nasaz, Nassat, Nassatt, Nazard, Nazardo.

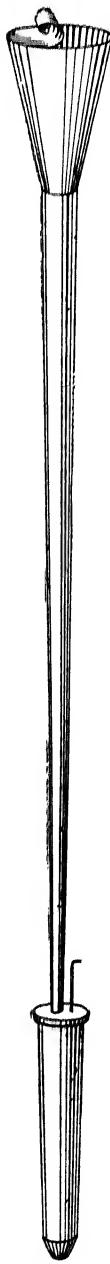
The Twelfth. Sometimes synonymous with Rauschquint (*q.v.*).

The name is derived from either (1), (Ger.) Nase = nose. From the bare nasal sound supposedly produced by the sounding of fifths. Or, (2), (Ger.) Nachsetzen = to place behind. In the ancient primitive organs the Prestant (Lat., *Præstare* = to stand before) composed the first row of pipes, the Mixture, sometimes called Nachsatz, standing behind. It is thought that a relic of this survives in the name Nasat.



Nason—Nasonflöte. 4 ft., occasionally 8 ft.

The name, Nason, was applied by the old English builders to a 4 ft. Stopped Diapason, savouring strongly of the Quintatön. Hence, possibly, the name (see derivation (1) of *NASAT*).



Oboe.

Nete—The Quint. The title occurs in ancient specifications.

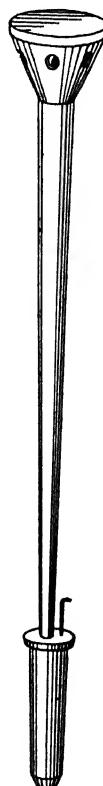
Noli me tangere—(Lat.) = Do not touch. See *FUCHSSCHWANZ*.

O.

Oboe—Hautboy. (Fr.) Hautbois. (Ger.)

Hoboe. (Fr.) Haut = high; Bois = wood; a wooden instrument with a high-pitched tone. 8 ft.; Contra Oboe, 16 ft.; Oboe, 4 ft., sometimes known as Oboe Clarion, rarely found.

The Oboe stop is named after the orchestral instrument. The form and characteristics of the latter are sufficiently well known to render superfluous any description of it here. It was a development of the ancient Chalumeau. In Germany the Oboe was formerly frequently made as a free reed; it is now usually of the beating variety. The English type of Oboe is almost entirely unknown on the Continent, the stop now found there (especially those made by Messrs. Walcker) usually corresponding to our Orchestral Oboe. The English Oboe is a beating reed, with pipes of small scale, shaped as an inverted cone, and surmounted by a bell. The pipes were formerly open at the top, but are now usually provided with a metal lid for purposes of regulation and the exclusion of dirt. Occasionally they are entirely capped (e.g., usually by Walker, and sometimes by Norman & Beard and Compton). A capped Oboe is shown in the accompanying figure. There is also illustrated an ingenious regulating device frequently used in Germany. Behind the usual vents are shown another set, which are pierced in a strip of metal attached to the cap. The size of the outlets can thus be regulated to a nicety by turning the cap. The Oboe is often continued by a bass of Bassoon pipes, unprovided with bells.



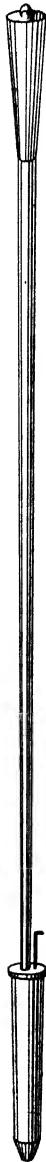
“Capped”
Oboe,
showing
special
regulating
device.

The Oboe emits a quiet tone of a strangely wailing character, resembling that of a high-pitched nasal voice. In the tenor octave it yields a peculiarly

muffled tone. Regarding, at the present time, the work of the most representative English firms, it would appear that the old-fashioned Oboe tone is again coming into vogue, something more powerful but less plaintive having in the meantime largely been substituted. It is not difficult to discern a direct causal nexus between this and the wonderful advance in the direction of smooth reed voicing witnessed during the past ten years. The Oboe is, perhaps, the easiest reed of all to voice. Some care is, nevertheless, required, if the bass is to be kept smooth and free from rattle. The Swell Oboe was formerly the first reed to be inserted in the organ, probably on account of its dual function as combinational and solo stop. So far as combinational usage is concerned, the modern keen String Gamba, however, proves a satisfactory substitute for this stop. And for solo purposes, Oboe tone may often satisfactorily be built up by some such combination as Viol and Flute. It is now generally agreed, amongst those who keep in touch with the development of tonal design, that a fuller-toned reed is altogether more serviceable. As the first reed of the organ, therefore, in modern organ designing, the Cornopean is usually selected in preference to the Oboe (see also OBOE-HORN).

The **Orchestral Oboe** is often made like an ordinary Oboe, but of very much more slender scale. The tongues, of course, are treated specially. But another form, which has found favour with indolent builders, consists of an ordinary small-scaled Oboe pipe, with a slot cut under the bell to thin or dilute the tone. The Orchestral Oboe was really invented by Mr. George Willis, a brother of the late Mr. Henry Willis, and the founder of the "Willis" system of reed-voicing. The Willis pattern is made of inverted conical pipes, capped at the top. They are slotted, and are usually pierced with a hole opposite to the slot. Sometimes the pipes were made with four slots. The stop is usually placed on a heavy-wind pressure, and the bore is small. The tone is very piquant. This pattern of pipe is used by several builders. Willis, Walker, and other firms have also employed open conical pipes without bells. There is a good example at St. Werburgh, Derby (Walker, rebuilt by Ingram). Yet another type of

Orchestral
Oboe.



Orchestral
Oboe
(Willis).

Orchestral Oboe was invented by Mr. Hope-Jones. It is very piquant in tone and possesses less body even than the Willis variety. The pipes are of the most diminutive scale, widening as they ascend, and of true length. They are sometimes surmounted by bells, and are usually made of tin. The tongues are very narrow, but thick. Burton Parish Church (Norman & Beard, and Hope-Jones); Battersea Polytechnic (Beale & Thynne, voiced by Whiteley). There is no doubt that thick tongues are essential to the best results. Under such conditions only is it possible to get a tone piquant, rather than thin and characterless. Increased wind pressure is, of course, necessitated, but the subdued power of the stop may be retained by the use of narrow shallots. The **Contra Oboe** is a delightful stop, specially useful as a quiet Swell double reed. Some of Willis' are so smooth as to suggest the combination of a flue pipe therewith, when heard in contrast to his fiery Cornopeans. In 4 ft. pitch the Oboe is occasionally employed as an Echo Clarion. Except possibly under extreme circumstances in a chamber organ, in such a capacity the stop is of no practical value.

Oboe d' Amore—Oboe d' Amour. (Lat.) Amor = love. See **OBOE, ECHO.**

Oboe Echo—Oboe d'Amore (*q.v.*).

An Oboe of soft, subdued tone. The pipes are usually capped. Schulze's Echo-Oboe at Armley Church, Leeds, is a quiet wood flue stop, on 1½ in. wind. Its tone is indistinguishable from that of a reed. The voicing presented such difficulty that Schulze vowed he would never make another. Whilst deserving of all credit as an exemplification of the proverb *Artis est celare artem*, such feats of legerdemain are absolutely devoid of all practical value. The instrument, Oboe d'Amore, was an alto Oboe. It was much used by J. S. Bach. An example of this organ stop occurs at Washington Temple, U.S.A., (Kimball, Co.).

Oboe-Flute—4 ft.

A delicate Flute invented by William Hill, of small scale and slightly stringy tone. An example existed at Worcester Cathedral. Obsolete.

OBOE-HORN—16 ft. ; 8 ft.

Invented by Mr. Hope-Jones. The Oboe-Horn, as its name implies, may be described tonally as a cross between an Oboe and a Horn. In construction it is an Oboe of large scale, with weighted tongues. The Oboe-Horn was designed as a compromise suited to the conditions detailed under Oboe. Victoria Rooms, Clifton ; Sutton Coldfield ; Llandaff Cathedral.

Obtusa—Obtusior. (Lat.) Obturare = to stop up ; *cf.* (Eng.) obtuse.

A name for Gedeckt occurring in ancient specifications.

Ocarina—4 ft.

An octave stop, named Ocarina, occurs on the Great organ at Bridlington Priory Church (Anneessens, of Gramont, Belgium). Mr. George T. Patman, F.R.C.O., of Glasgow, and late organist of that Church, kindly informs the author that the stop is a metal one of true length, resembling in tone a Harmonic Flute. There is an Ocarina of similar pitch on the Positif of the organ at Seville Cathedral (Aquilino Amézua, 1903).

Octave—Manual 4 ft. ; pedal 8 ft. An octave Diapason.

The name "Octave" is surely more rational in application than "Principal." The latter term is, indeed, employed in Germany to designate the principal stops of the organ, the Diapasons. The Octave, of course, is of proportionately smaller scale, and voiced rather brighter than the unison Diapason. A distinction is now usually drawn between Octave and Principal, the former being loud and full-scaled, the latter more subdued and bright. The Octave is the connecting link between the foundation stops and the higher-pitched stops of the organ. It should therefore be designed and voiced with very great care. It is to the boldness of the Octave that much of the solidity and brilliancy of the work of the late Mr. Henry Willis is due. As a pedal stop the Octave is now usually an extension of the Major Bass.

Octave Clarion—2 ft. Obsolete.

A reed of super-octave pitch is occasionally to be found in ancient organs. One such exists on the Pedal organ at Cologne Cathedral.

Octave Coupler—(It.) *Terzo Mano* (= third hand).

Sometimes "Octaves" (plural to distinguish it from the sounding stop, Octave).

A Coupler controlling an arrangement whereby the octave keys to all those depressed on one manual or the pedal are brought into action. With pneumatic coupling the coupled keys do not fall as with mechanical. Octave Couplers add vastly to the resources of an organ, particularly if the instrument be designed with a view to their inclusion as part of the aggregate tonal scheme. In Italy the Octave Coupler dates from a very early period. For a description of Octave Couplers functioning from one manual to another, see COUPLER.

OCTAVE DIAPASON—See OCTAVE.**Octave Hautboy**—Hautboy Clarion. 4 ft. See HAUTBOY.**Octave Oboe**—See above.**OCTAVE QUINT**— $2\frac{2}{3}$ ft. See TWELFTH.**Octavin**—(Fr.) = Fifteenth. 2 ft.**Offenbass**—(Ger.) = open Bass. See MAJOR BASS.

Offenflöte—(Ger.) = open Flute. Virtually a Clarabella.

Oiseau—(Fr.) = bird. See AVICINUM

Open—A term indicating that the stop to which it is prefixed is composed of open, not stopped, pipes.

Open Diapason—The prefix is unnecessary. See DIAPASON.

Ophicleide—(Gr.) *օφις* = serpent, *κλεις* = key. Pedal, 16 ft. and 32 ft.; manual, 16 ft. and 8 ft.

A powerful pedal reed. Accurately, it should be more powerful and "free" in tone than the Trombone. On the Continent it is sometimes to be found as a large-scaled free reed. The original Tuba Mirabilis stop at Birmingham Town Hall (Hill, 1835) was named Ophicleide. The instrument Ophicleide was invented *circa* 1790. It was a development of the Serpent (*q.v.*).

Orchestral—A term indicating that the stop to which it is prefixed is designed for imitative rather than combinational use. See CLARINET, CONCERT FLUTE, OBOE. See also VICLE D'ORCHESTRE.

Orlo = Zink.

P.

Pandean Flute—See FLAUTO DI PAN.

Parforce—See CORNE PARFORCE.

Pastorita—(Lat.) Pastor = shepherd See COR DE NUIT.

Passuna—See POSAUNE.

Paukerengel—(Ger.) Pauke = drum; Engel = angel.

A mechanism found in some ancient organs causing one or more angels, situated in the case, to beat drums. Usually controlled by a pedal. Garrison Church, Berlin (Joachim Wagner).

Pedal Pipes—See MAJOR BASS.

Pente—(Gr.) *πέντε* = five. Quint.

Petit—(Fr.) Petit = small. 1 ft.; sometimes 2 ft. A Flageolet, at Ansprech.

Pfeife—(Ger.) = pipe. The word is sometimes used as a suffix synonymously with Flöte (*e.g.*, Hohlpfeife).

Philomela—(Lat.) = nightingale.

A large-scaled solo Doppelflöte or wood Stentorphon, something after the Tibia Plena style (see JUBALFLÖTE). Cincinnati Concert Hall, U.S.A. (Hook & Hastings). There is a musical instrument of the name made in various classical forms. It is akin to the Violin, but has wire strings.

Phocinx = Krummhorn.

Phoneuma—(Gr.) $\phi\omega\nu\eta$ = sound or voice; $\nu\epsilon\nu\mu\alpha$ = sign, i.e., a sign of a sound. But possibly from $\pi\nu\epsilon\nu\mu\alpha$ = breath or spirit—voice of the spirit. If the latter meaning be that intended, the π should not have been elided. Invented by Mr. Hope-Jones. 8 ft.; 16 ft.

The Phoneuma, roughly speaking, is a stopped pipe of Dulciana scale, speaking as a Quintatön. It is, however, more stringy in character than the last-named stop. The Phoneuma, as found in Mr. Hope-Jones' organs, is purely a fancy stop, barely audible. It is useful occasionally for special effects, but it is in reality more of a curiosity in voicing than anything else. The lower octaves of the stop are usually bearded. In some examples, a peculiarity of the voicing is that the nicking extends but half way across the face of the languid. The mouth of the Phoneuma is narrow, being in some instances only $\frac{1}{6}$ of the circumference of the pipe. Occasionally two Phoneumas are caused to beat together as a Voix Céleste (see CELESTINA). In fact, the Phoneuma was originally introduced as a stop arranged to beat with a Gedeckt, a circumstance which accounts for the stereotyped definition of the stop as "something of the nature of the Voix Céleste." When voiced as a quiet and keen Quintatön, the stop might be most effectively employed as a *timbre* creator, and even, perhaps, as an accompaniment to a solo stop. St. Mark, Brighton; St. Michael, Chester Square, W. (Hope-Jones); Burton Parish Church (Norman & Beard and Hope-Jones). In 16 ft. pitch, Oakleigh Park Congregational Church (Ingram, Hope-Jones & Co.); Orchestrelle Co., Regent Street, W. (Austin Organ Co., of U.S.A.). In U.S.A.—First Presbyterian Church, Montclair, N.J. (Austin Organ Co., Hope-Jones); St. John's School, Manlius, N.Y. (Hope-Jones and Harrison).

PHYSHARMONIKA—Phisharmonika, Seraphine. 8 ft.; 16 ft.

Virtually a set of Harmonium (free) reeds incorporated in the organ. The Physharmonika is usually unprovided with tubes and fed from a separate reservoir, the wind pressure of which is capable of being varied by means of a pedal at the console. The power of the Physharmonika is thus susceptible of variation without any concomitant alteration of pitch. The Physharmonika can be used expressively with excellent effect in a

resonant building ; it is likewise an excellent *timbre*-creator when combined with other stops. Occasionally the stop is provided with short tubes, which, exercising as they do but slight influence on the pitch of the stop, do not interfere with its expressive facilities. Ulm Münster, Munich Concert Hall, Riga Cathedral, Boston Music Hall, St. Petersburg (all by Walcker) ; Winterthur ; Stiftskirche and Jews' Synagogue, Stuttgart. The Physharmonika is also used by M. Puget, of Toulouse. The instrument of the name was patented by Anton Haeckl at Vienna in 1821. It was one of the precursors of the modern Harmonium, though not expressive (see FREE REED). Messrs. Norman & Beard occasionally apply a tubeless expressive free reed attachment to organs (e.g., Sutton Church, Surrey). See KEROPHONE. A similar arrangement is prepared for the Pedal organ of the charming little chamber-organ built by Mr. Compton for Mr. A. Armitage, West Bridgford, Nottingham.

Piccolo—2 ft.

The Piccolo is a super-octave stop of more liquid and flutey tone than the Fifteenth. It is usually found on the Swell or Choir organ. The Piccolo is best made of harmonic pipes, for, when so constructed, it is less affected by change of temperature and fluctuation of wind pressure, and not so prone to derangement by dirt. The Harmonic Piccolo is also of fuller and purer tone than the true-length variety.

Piccolo Harmonique—(Fr.). See above.

PIERCED—Pierced Gamba, Pierced Salicional, etc.

Pierced is a prefix synonymous with "slotted." A slot is an opening cut in the side of the pipe near the top. When of narrow diameter it has the effect of weakening the ground tone of large-scaled pipes, and of rendering them somewhat horny in character (see DIAPASON, Section 6). Small-scaled pipes are also affected by "slotting," though not to the same extent. Gambas and Viols are generally slotted—as much for the purpose of facilitating tuning as for anything else. Sometimes the prefix, Pierced, refers to an arrangement similar to that described under Keraulophon. St. Asaph Cathedral (Hill). The word was also used by Lewis. For illustration, see SALICIONAL, GEIGEN PRINCIPAL, etc. When applied to stopped pipes, the prefix, Pierced, implies that a hole is bored through the stopper, in fact, that the pipes belong to the class known as Half-Stopped Pipes.

Piffaro—See FLAUTO TRAVERSO, BIFARA.

Pileata—(Lat.) = wearing a hat, whence, *per synecdoch*, (Late Lat.) = stopped.

Pilgerchor—(Ger.) = pilgrim choir.

A Vox Humana effect found in some ancient German organs, intended to represent the distant singing of pilgrims.

PLEIN JEU—(Fr.) = Full Mixture.

Blockflöte—A corruption of **Blockflöte**.

POLYPHONE PIPES—See under **ROHREFLÖTE**.

Pommer—Onomatopœic. See **BOMBARDE**.

PORTUNAL—Bordunal, Bordunalflöte, Portunalflöte. Bordunal is probably the more correct spelling, the name being derived from Bourdon. Albeit Portunal is the accepted presentation. 8 ft.; 4 ft.

The Portunal is composed of open wooden pipes widening as they ascend. The tone is velvety and often accompanied by a modicum of string tone, as is the case with so many of the German varieties of Flute. The bass of the Querflöte was sometimes formed of Portunal pipes.

Posaune—(Ger.) = Trumpet. Manual, 8 ft.; pedal, 16 ft. Contra-Posaune: Manual, 16 ft.; pedal, 32 ft.

On the Pedal organ the Posaune is equivalent to a smooth powerful Trombone (*sub g.v.*). The manual Posaune is a large-scaled Trumpet of powerful and rather blaring tone. Whilst more powerful than the Trumpet, it possesses none of the smooth Tuba quality of the Tromba.

PRÆSTANT—See **PRESTANT**.

Pressior—(Lat.) Pressorius = pressed or closed. An ancient name for Gedackt.

PRESTANT—Præstant (Lat.) Præstare = to stand before.

Originally in Germany and France the word Præstant was employed to designate those pipes standing in the case (see **MONTRÉ** and **NASAT**). Later, in company with **Prinzipal**, it became applied to Diapasons of 32 ft., 16 ft., 8 ft. and 4 ft. pitch. As in England, **Principal** is now applied to a 4 ft. Diapason, so also in France, **Prestant** bears the same connotation.

Primaria—(Lat.) Primus = first.

Equivalent to the ancient denotation of **Præstant**.

Primaria Regula—See **REGULA** and **PRIMARIA**.

Principal—(Ger.) **Prinzipal**.

In this country a 4 ft. Diapason (see **OCTAVE**). In Germany, **Prinzipal** variously represents the Diapasons of 32 ft., 16 ft., 8 ft. and 4 ft. pitch.

Prinzipal-Flöte—See FLUTE-PRINCIPAL and SOLO.

PROGRESSIO HARMONICA.

A Mixture stop composed of ranks which, instead of "breaking" (see MIXTURE), increase in number as the pitch rises. A variety of Progressio Harmonica was invented by Musikdirektor Wilke, of Neu Ruppin. Its special function was to increase the power of the treble portion of the compass. The name is now loosely applied in Germany to Mixture stops of various composition.

PROLONGEMENT HARMONIQUE—(Fr.) Prolongement = prolongation.

A mechanical device for sustaining a chord or note, even though the fingers be removed from the clavier. It is applied either by drawstop or pedal, according to one of two systems. In one case the chord or note is sustained until a release pedal be operated. In the other, the chord or note is sustained until such time as another (sustained in its turn) be depressed, or the movement thrown out of gear. The Prolongement Harmonique would be a valuable adjunct to a Solo organ. On an organ so equipped, it would be possible, for instance, to sustain notes on the Tuba, leaving the hands free for intercalated passages on the full Great organ. As far as the author's knowledge extends, there are but two examples of the use of the Prolongement Harmonique in this country. Tewksbury Abbey (Michell & Thynne, 1887), since removed. Chamber Organ built by the Rev. Scotson Clark, formerly at the London Organ School. It is used abroad, though infrequently.

Pyramid—Equivalent to Cone. Pyramid-Diapason, etc.

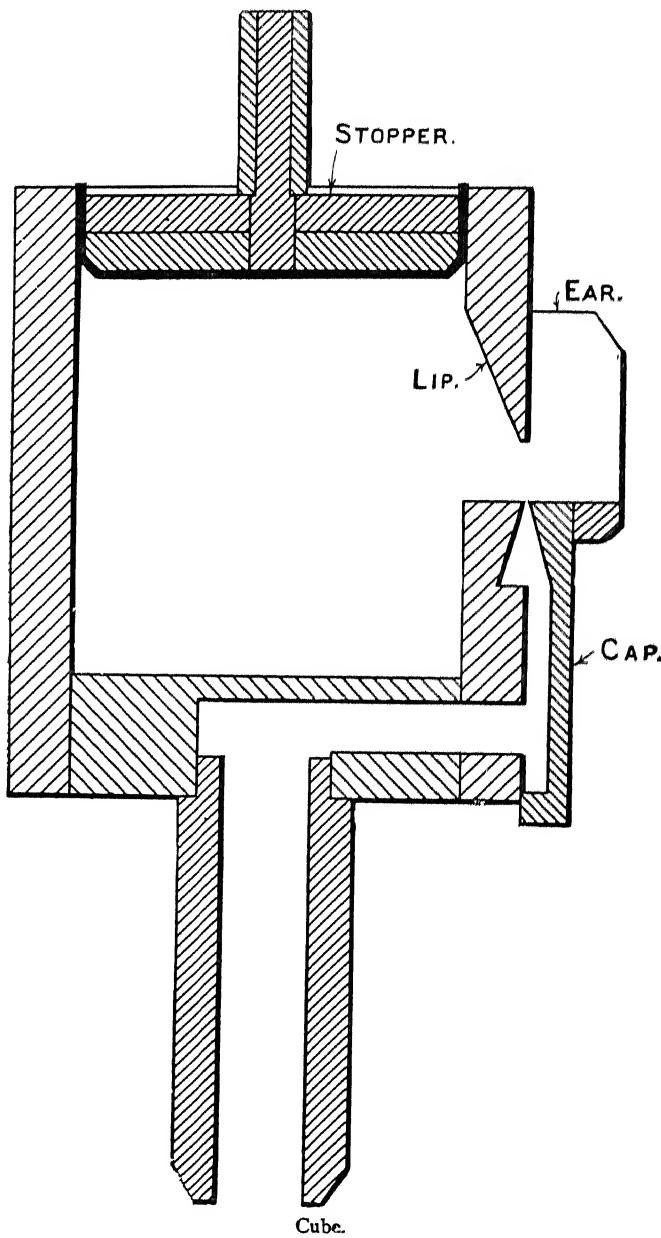
Pyramidflöte.

A variety of Querflöte of "pyramidal" or tapering structure. Liegnitz. See FLAUTO TRAVERSO.

Pyramidon—16 ft.

A stop invented by the Rev. Sir F. A. Gore Ouseley. The CCC note was produced from a stopped pipe measuring 2 ft. 9 in. high, 2 ft. 3 ins. square at the top, and 8 ins. square at the block. The pipe at the summit was, therefore, more than three times as large as at the mouth. In a letter to the author, dated a few years back, Mr. Henry Bryceson, a celebrated organ builder of the period, expressed himself as follows: "I believe the Pyramidon never passed the experimental stage in an organ built by Flight for Sir Fred. Ouseley's College Chapel in S. Wales. On enquiry he, (Flight) only smiled about the stop, so, evidently, he had no great opinion of it." The Pyramidon, of course, occupies too much soundboard space to be of any practical value. "Boxes" and "Cubes," into an orifice in

which wind is directed, have from time to time been made. Their tone is apt to be irregular, and ill-defined, and generally unsatisfactory.



The author, has, in his possession, however, a Cube of excellent effect, made and voiced by Mr. Compton, the tone of which somewhat resembles that of the same builder's Tibia Mollis. The lip is leathered. Cube basses might be found of great utility, when dealing with situations of some awkwardness.

Q.

Quadragesima—(Lat.) = fortieth.

Mixture ranks of high pitch are sometimes found in old Italian organs, drawing separately.

Quadragesima Terza—(Lat.) = forty-third. See above.

Quarte—See RAUSCHQUINT.

So called from the interval of a fourth (Lat. *quartus*) separating the Twelfth and Fifteenth.

Querflöte—(Ger.) Quer = across. See FLAUTO TRAVERSO.

Quincena—(Sp.) = Fifteenth.

Quint—(Ger. and Fr.) Quinte. (Lat.) Quintus = fifth. Manual $5\frac{1}{3}$ ft.; pedal, $10\frac{2}{3}$ ft. But the name is sometimes used for Octave Quint or Twelfth. Manual, $2\frac{2}{3}$ ft.; pedal, $5\frac{1}{3}$ ft. Schulze at Bremen Cathedral, and the Kimball Co. at Washington Temple, U.S.A., inserted a pedal Quint of $21\frac{1}{3}$ ft. pitch.

The Quint is a Mutation stop, speaking (when a manual stop of $5\frac{1}{3}$ ft. length) at the interval of a fifth above the unison pitch. The pipes of the manual Quint are of various forms. In this country they are nearly always stopped. Abroad they are also variously of cylindrical open pipes, tapering Gemshorn pipes, widening Dolce pipes, or open rectangular wood pipes. Of late years the Manual Quint (as an independent stop) has been very generally discarded in this country. Certainly in organs of moderate size, where economy is essential, it can well be dispensed with; but in larger instruments a Quint of duly subordinate tone is by no means to be despised. Like the Twelfth, it conduces to cohesion of tone, constituting a portion of the harmonic structure of the organ. In too many instances, nevertheless, the Quint has been badly voiced, with the result that instead of exercising a beneficent mollifying influence on the general tone, it has given rise to a thick and "muddy" effect. In schemes where doubt is entertained as to the advisability of the inclusion of a Quint, a Quintatön, 16 ft. (q.v.) will in many instances be found to form a desirable compromise. Fifth-sounding mutation ranks should, as a general rule, be of quiet, unobtrusive and rather dull tone, as free as possible from harmonics. The Quint then, is best made of Dolce or stopped pipes. In some instances, notwithstanding, a Gemshorn Quint of quiet tone is by

no means ineffective. Mixtures frequently comprise a Quint rank in the upper portions of their compass. For Pedal Quint see ACOUSTIC BASS.

Quint Coupler.

In the organ at St. John, Birkenhead, in which Mr. Hope-Jones first developed his embryonic tonal ideas and electrical appliances, was inserted a Manual Quint Coupler by means of which the Swell organ could be coupled to any manual at the pitch of a fifth above unison (quint). Judiciously employed, the Quint Coupler was instrumental in the production of many curious and by no means displeasing effects. Herr Stahlhuth, of Aix-la-Chapelle, has also experimented with the Quint Coupler. On the pedal organ a Quint Coupler has frequently been employed for the production of mock 32 ft. effects (see ACOUSTIC BASS).

Quintalophon—32 ft. tone.

The name applied to a three-rank Acoustic Bass stop at Nôtre Dame Cathedral, Montreal, (Casavant).

Quintflöte—A Quint of light-toned Flute pipes.

Quintatön—Quintadena.

In mediæval specifications, variously Quintaten, Quintaden, Quinta-ed-una, Quintitenens. A stop varying as much in tone and construction as in the supposed derivation of its names. Allihn is of opinion that it may be derived from the late Latin, Quintadenare, (Fr. Quintadiner). Others advance: (Lat.) Quintam Tenens = holding the fifth. (Lat.) Quinta ed (et) una = fifth and unison. (Lat.) Quinta a tono = fifth from the tone.

Probably *all* these derivations are correct, representing distinct names.

The Quintatön is a stopped pipe, the distinctive feature of which is that its first harmonic (the twelfth or octave fifth) is prominently developed. The pipe thus has the effect of speaking two separate notes simultaneously. Albeit they are so perfectly blended, and the average ear is so accustomed to synthesizing harmonics with the fundamental as constituting one single musical note, that many people are unable, at first hearing, to distinguish two notes. Some worthy persons profess to be unable to tolerate the Quintatön because it incessantly gives rise to a succession of consecutive fifths. *Prima facie* the objection is rather chimerical, for all pipes speak consecutive fifths (*i.e.*, twelfths), stopped and string-toned pipes more brazenly than others. Used in combination, the Quintatön, when viewed from this aspect, stands on precisely the same footing as the plain Gedeckt or Gamba. How wide indeed is the gulf fixed between the modern academical mind and the primitive *organum* of our forefathers! Nor is the use of this stop for solo purposes open to any serious objection. We must, in point of fact, admit the vital distinction between the consecutive fifths of the harmonic series *as produced from one pipe*, and those emanating from two or more pipes, voices or other tone generating agents, each with

its own individual conflicting set of overtones. As has already been observed, the two notes of the Quintatön are blended together in an ideal manner—far more perfectly, indeed, than those of any two separate pipes could possibly be. The *real* consecutive fifths of Mixture ranks are defensible solely on the ground that such stops are intended to corroborate the harmonic series of the foundation work. Nevertheless, amongst those who take exception to the Quintatön, there are, conceivably, many who would, forthwith, cry aloud against any suggested abolition of Mixtures. *Vox et præterea nihil.* In many Dutch and German organs the Quintatön is nothing more than a badly voiced Bourdon, with the twelfth left prominent in the tone, coarse and unblending in character. Walcker of Ludwigsburg, amongst other German builders, makes Quintatöns of the modern type. Many of the old English stopped Flutes were virtually Quintadenas; *e.g.*, Hampton Court Palace (Father Smith), and Green's Nasons (St. Peter, Nottingham). It was the goodly proportion of the twelfth in these stops which so enhanced their blending properties (see GEDECKT). (See also COR DE NUIT). The Quintatön was practically re-introduced into this country by Cavaille-Coll in his organ built for the Albert Hall, Sheffield, in 1873. It was subsequently adopted by Mr. Casson, (Longwood House, Nayland, 1897), to whose credit be it marked that he recognised early the value of the stop and has since consistently championed its use. Other examples: London Organ School; Chamber Organ, Cathcart House, Kensington, W. (Positive Organ Co.).

The Quintatön likewise found an earnest advocate in Mr. Hope-Jones, undergoing at his hands improvements such as rendered it more suitable for combinational use, and adapted it to increased wind pressure. The Hope-Jones Quintadena—as he usually termed it—is often provided with a leathered lip, and, in some cases, is bearded. It possesses greater breadth of tone than the older variety. There are examples at:—Worcester Cathedral; Collegiate Church, Warwick; Parish Church, Burton-on-Trent; St. Mark, Brighton, etc. Whitehaven (Harrison & Harrison, 1904). Another variety of Quintatön has been introduced into some of their organs by Messrs. Hill & Sons. In a resonant building it forms a solo stop of exquisite beauty, sometimes even resembling an orchestral reed of considerable piquancy. There is a good example at Peterborough Cathedral. The Quintatön, as now made, speaks the ground tone and twelfth in about equal proportion. Contrary to the generally prevalent idea, the main



Quintatön.

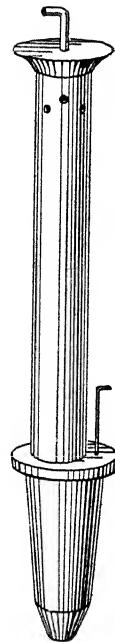
difficulty in voicing the stop is to prevent undue predominance of *the twelfth*. The pipes are generally of spotted metal, cylindrical in shape. The bass of the 16 ft. and sometimes of the 8 ft. Quintatön is of wood. The mouths are left very low, and the stoppers are solid. Except in the case of the Hope-Jones variety, the pipes are generally bearded. In 32 ft. pitch, the Quintatön is occasionally found on the manual, extending to tenor or middle C. It is probably the most satisfactory manual stop of that pitch. London Organ School (Positive Organ Co.). For pedal Quintatön 32 ft., see ACOUSTIC BASS.

As a manual double the Quintatön 16 ft. is infinitely superior to the customary Bourdon. If possible, the Swell double should certainly be composed of open pipes (see BOURDON). It frequently happens, however, that for reasons of economy—alike of funds and space—open pipes, and the increased size of the swell box necessary to their accommodation, are ruled out of court. In such instances, the Quintatön is undoubtedly the most effective stop to employ, regarded solely as a manual double. It costs no more than a Bourdon, and provides what is practically, in effect, a soft toned Quint. Proportionately as the overtones of the Bourdon become prominent, so is the stop endued with better blending and “timbre-creating” property, so is it affected by the Swell *crescendo*—ever ready to influence stops of ample harmonic development. Not only does the Quintatön in combination, impart to the tone a peculiar clearness, piquancy and cohesion, but it also constitutes a new tone-colour instrumental in the production of special effects, and available likewise for solo use. The only respect in which the Bourdon has the advantage, lies in the fact that the Quintatön does not lend itself to use as a soft stop borrowed on to the Pedal organ. There is no reason, however, why the Great organ Bourdon should not be utilized in this capacity. It should by no means be too powerful for normal use with soft combinations. A family of Quintatöns of 16 ft., 8 ft. and 4 ft. pitch, would more effectually brighten up the general tone of an instrument than many ranks of Mixture-work. One of the secrets of modern tonal design, is the building up of brilliancy *within* the organ tone itself, instead of by the application of a number of Mixture ranks, which are, so to speak, extraneous to the general tonal scheme. The Quintatön 4 ft. is sometimes found as the only octave stop on the Swell in Hope-Jones organs. The practice has been adopted in a modified degree by Mr. Compton of Nottingham (Emmanuel Church, Leicester; U.M.F. Church, Stapleford, Nottingham). When applied to organs designed for free accompaniment, it may thus be employed effectively, serving to brighten up the reed tone. In the ordinary accompanimental instrument, however, it is perhaps well that the 4 ft. Quintatön should not be used, unless very subdued in tone or covered by some 2 ft. stop.

R.

Ranket—Sordun. 8 ft.; Gross Ranket, 16 ft.

A variety of Chalumeau used at a very early date. The pipes were capped at the top, a few small holes being opened in the side. Sometimes the Ranket was a double pipe—one pipe being inside of, and opening into, another. A similar device has recently been employed for a chamber organ Vox Humana. The effect of this treatment was to render the tone of the Ranket smothered and “bottled up.” There is often a tendency toward a similar effect in modern capped chorus reeds. It is curious to note how old ideas are rejuvenated. The Ranket and other capped reeds with vents cut in the side are mentioned in Praetorius’ work (1619). Yet, notwithstanding the fact that capped reeds have consistently figured in Germany and elsewhere, ever since, one firm of organ builders, in 1885, actually patented the process of capping pipes “to keep out the dust and increase the mellowness of the sound!”



Ranket.

RAUSCHQUINT — Rauschquarte, Rauschflöte, Rauschpfeife, Rauschwerk, Quarte. (Ger.) Rauschen = to rustle or rush.

A Twelfth and Fifteenth combined on one slide. Other compositions have been known, viz., 2 ft. and $1\frac{1}{2}$ ft., and III or IV ranks, but the most authentic definition is as above. The interval separating the two ranks is a fourth, hence the name Quarte. A slight stretch of imagination causes the stop to assume a “rustling” effect, whence the prefix, Rausch. It was formerly a common custom of Continental and English builders to unite the two stops on one slide. But sometimes the thin whistling effect of the Great up to the Fifteenth, without the bell-like cohesion which should be imparted by the Twelfth, is required. Occasionally, also, a Twelfth, of suitable character, can effectively be employed without necessarily being associated with the Fifteenth (see HARMONIC STOPPED TWELFTH). The two stops, accordingly, are now generally controlled by separate sliders.

Recorder—4 ft.

The instrument of this name was of the Flute tribe. The name is said to be derived from an obsolete meaning of the verb to record, viz., to warble. Dallam’s specification of an organ erected in York Minster in 1632 contains the following passage: “Item, one recorder unison to the said principall. vi. li.” It was probably an ordinary Flute.

Reed—Reedwork. (Ger.) Zungenstimmen (= Tongue-stops), or Rohrwerk, (Archaic Ger.) Schnarrwerk = Reeds. (Fr.) Jeux d'Anches.

A collective name for a class of stops, the tone of which is produced in a different manner to that of flue pipes. In the reed pipe the tone is generated by a metal tongue or vibrator beating against or through a framework known as the reed or (Fr.) échalote, *anglise* shallot. This shallot is a brass tube with a considerable portion of one side cut away, presenting the appearance of a reed or stalk split down. When this

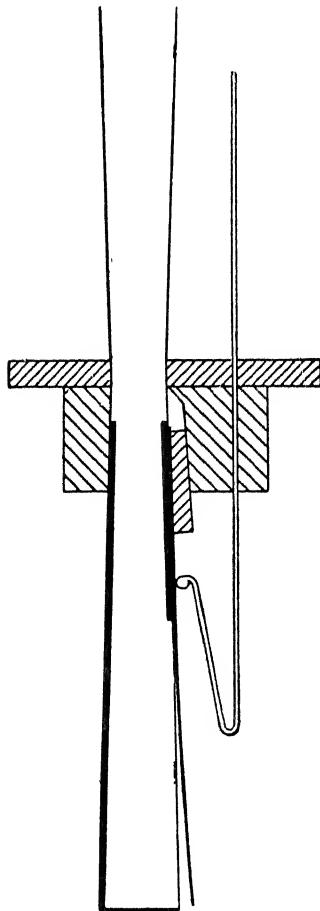


Fig. A—Beating Reed.

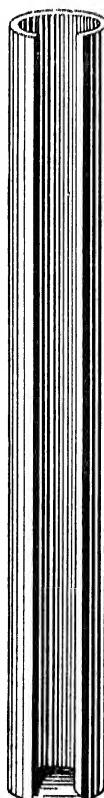


Fig. B—Open Shallot.

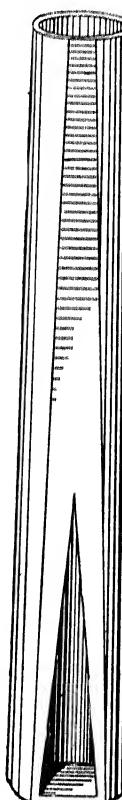


Fig. C—Closed Shallot.

opening extends the whole length of the shallot, the latter is known as "open," when only a portion thereof, as "closed." Open shallots are not

much employed by the best English builders, since they are apt to render the tone coarse and blatant. The maximum degree of power desirable can be obtained with wide closed reeds. The reeds used by German builders generally open out to greater breadth at the bottom than English ones. Inverted reeds with the opening running in the reverse direction, *i.e.*, wide at the top and tapering at the bottom, have been experimentally tried by German builders and by Mr. Hope-Jones. No very definite results were arrived at. The general theory anent the generation of tone in reed pipes is that the sound is produced by the periodic admission—by the vibrating tongue—of puffs or impulses of wind into the shallot, and thence into the pipe. Mr. Hermann Smith, a well-known authority on these matters, stigmatizes this theory as false, or, at any rate, inadequate. The initial source of tone, he asserts, "is the note emitted by the vibration of the tongue itself, the puffs (so-called) being the fuller definition of the suction due to confining the affected air in a tube." "Resonance," he further adds, "means sympathy aiding the original force." The scope of this work will not admit of further exposition of Mr. Hermann Smith's most fascinating theories, suffice to say that he advances many weighty reasons for adhesion to his belief.

The use of the epithets "open" and "closed," as applied to the shallots, must not engender confusion with those relating to the treatment of the pipes. Reed pipes are generally left open at the top. Occasionally, however, they are closed with a metal lid or a corked wooden cap, the necessary openings or vents being cut in the side of the pipe. They are then known as capped or covered, rarely as stopped pipes. An illustration of a capped reed may be seen under OBOE. The practice of capping full-scaled chorus reed work has a pernicious influence on the tone, rendering it thin and devoid of carrying power, often even smothered in effect. Capping also imparts a peculiar hollow quality of tone, never quite absent even from chorus reeds so treated. The practice was strongly condemned by the late Mr. Willis. It is, in effect, a mere makeshift attempt to evade the real difficulty of successful reed-voicing—the art of securing refinement of tone by the *treatment of the tongue*. It is needless to resort to capping to exclude dirt from reed pipes. This end may be achieved by the process, generally in use, known as "hooding" or "bonneting," *viz.*, of turning over the top of the pipes to a horizontal position. As an alternative process Mr. J. W. Whiteley (in the fine organ voiced by him for Messrs. Beale & Thynne at Battersea Polytechnic) and Mr. John H. Compton (at Emmanuel Church, Leicester) have employed with eminently satisfactory results a mesh of fine silk gauze inserted in the pipes. It does not impede the emission of tone, and effectually excludes dirt of a harmful character. Whilst treating of this subject it may parenthetically be remarked that dust is as liable to enter at the foot of organ pipes as at the

top. In many organs all sorts of solid matter is constantly indrawn by the bellows feeders and thence circulated through the internal system of the instrument. It would be quite

worth adopting this obstructive gauze system in the interior of the organ in cases where it is impossible to plant the bellows work at an altitude sufficiently remote from the ground. In order to

reduce their length, large pipes are generally curved round in their lower part, in the form of an elongated loop, somewhat similarly to some orchestral brass instruments. This process is known as "mitreing" the pipe, from the fact that the latter is caused to assume rudely the form of a mitre.* It is frequently said that mitreing improves the tone of reed pipes. It is not unlikely that it had the effect of subduing something of the harshness of the old-fashioned type of reed; but it cannot with any semblance of verity be said to improve the modern reed, nor yet, howbeit, appreciably to deteriorate it. The bass of double reeds is frequently made of half-length pipes. By dint of careful treatment the effect may be rendered quite satisfactory in the case of enclosed reeds. The practice is not one generally to be commended, as the tone is apt to be harsh and rough.

Reeds are tuned by a wire crook, of which one end, accessible to the tuning knife, protrudes from the boot and the other bears on the tongue. By moving this in an upward or downward direction the arc of gyration of the tongue can be extended or curtailed, the pitch flattened or sharpened. The tight-fitting of these crooks is a *sine qua non*, widespread neglect on this point being a fruitful source of the instability of pitch of individual reed pipes, which is so frequently encountered. The secret of successful reed voicing consists in imparting to the tongue such a degree of curvature as shall cause it to *roll down rather than strike against* the shallot, or, maybe, against the pneumatic buffer which is commonly supposed to intervene. Should a "flat" occur in the reed by reason of an imperfect curve,

Fig. D—
"Hooded"
Reed.

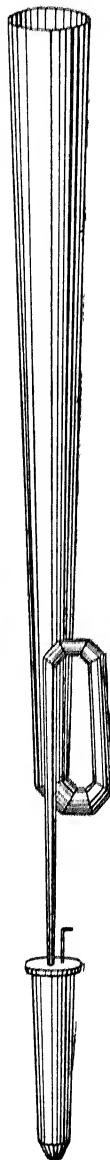
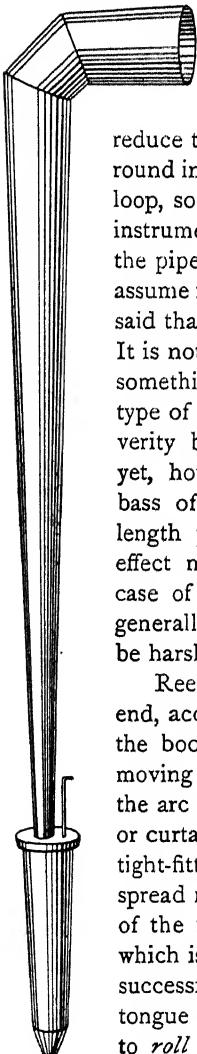


Fig. E—
"Mited"
Reed.

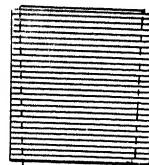
* The word is sometimes used synonymously with "hooding."

or a speck of dust lodge between the shallot and tongue the tone will be rendered harsh and blatant. It is on the precise stoichiometrical curve of the tongue—the distribution of elasticity—that the nature of the tone largely depends.

This method of voicing was essentially French in origin. It was developed by Cavaillé-Coll, whose work reached a zenith of perfection in the voicing of orchestral solo reeds. It was Willis, however, who on these foundations reared the vast edifice of modern chorus reed voicing. He was the first to systematically employ small weights screwed on to the end of the tongue.* By this process of "loading," as it is called, the tongues are rendered heavier and can therefore be reduced in length. The ill effects of internal and tortional vibration, inevitable in the case of long tongues, can thus be eluded. The best results are to be obtained only from tongues fashioned of thick hard brass or similar alloy. Tongues are occasionally curved or "burnished" by machinery, high efficiency and considerable economy of time being secured by this means. Reeds should never be blown with the mouth, as moisture condenses on the tongues and eventually impairs their quality of tone by corrosion.† Nor, again, should the tongues ever be handled or twisted

Fig. G—Plan of CCC Tuba tongue. Exact size (Compton).

Fig. F—Side view of CCC Tuba tongue, showing degree of curvature, and also thickness of lead (Compton).



* They had previously been essayed in the case of harmonium reeds, and German builders had occasionally run lumps of solder on to the end of large pedal reed tongues. But, as above stated, Willis was the first to systematize their use. Moreover, whilst these weights were originally employed for the purpose of remedying the sluggishness of speech of large reeds, Willis sought by their use to secure, in addition, greater refinement of tone.

† The writer once happened across the case of an organ, the reed tongues of which had corroded in a most mysterious manner. After much fruitless racking of brains it was discovered that the mischief was due to the fumes of a gas engine employed to operate the blowing apparatus. Engines of this sort should always be isolated from the bellows.

about in any way by amateurs, unless, indeed, they are incapable of further deterioration.

In the "free-reed" (*q.v.*) the tongue passes right through the shallot as in the Harmonium or American suction organ. A free-reed is illustrated under Clarinet. It will be seen that there is a "bridge," along which the tuning block passes. The voicer has obviously little control over the tongue, the quality of tone being mainly determined by the shape of the pipe or resonator. Thus it happens that all free reeds bear a strong family resemblance to each other and to the Harmonium. Except possibly in the case of very small-scaled orchestral stops, the tone of free reeds is not usually agreeable, unless in buildings of resonant acoustical properties. The objectionable harshness of tone of Harmoniums and free reeds generally is due to the excessive development of harmonics. Free reeds were formerly extensively employed in Germany, but are now fast falling into desuetude. On learning the English mode of treating striking reeds, Schulze, the eminent German voicer, at once abandoned the use of free reeds (see also COR ANGLAIS). Reeds have been made with double tongues (see DOUBLE-TONGUED REED), with the tongue beating on the inside of the shallot (see RETREATING REED), with the shallot tapering in a reverse direction (as above noticed), with wooden tongues and shallots, with shallots curved at the end like the tongue, in France with two channels leading from the shallot to the pipe, and with various other novel features. None of these varieties are now in systematic use.

German builders generally, and some French and English builders, cover their shallots with thin leather. Like capping in most cases, this is, as regards chorus reeds, an attempt to secure smoothness of tone by merely makeshift means instead of by the aforesaid scientific, though arduous process, of curving the tongue. Needless to say, the quality of tone usually resulting from such efforts lacks all intrinsic beauty, being merely nauseous in its pseudo-refinement and smoothness.* Willis, who strongly condemned this practice of leathering reeds, has conclusively demonstrated that it is not essential to smoothness of tone. And certainly, stops of the Hope-Jones Tuba Sonora type, which probably mark the greatest advance in the direction of smoothness of tone yet attained, are not leathered. Nevertheless, let it be said in extenuation that the use of leathered reeds, combined with really efficient curvature of the tongue, is not *per se* by any means so indefensible as that of capped chorus reeds.

The influence of thermal variation on organ pipes forms an interesting study—a study, moreover, of very practical import. If the pitch of the

* Add to this the fact, that, as the leathering is not usually continued throughout the compass, there is a nasty break in tone between the leathered and unleathered portions, and it will be seen that the process, as commonly practised, merits but scant shrift.

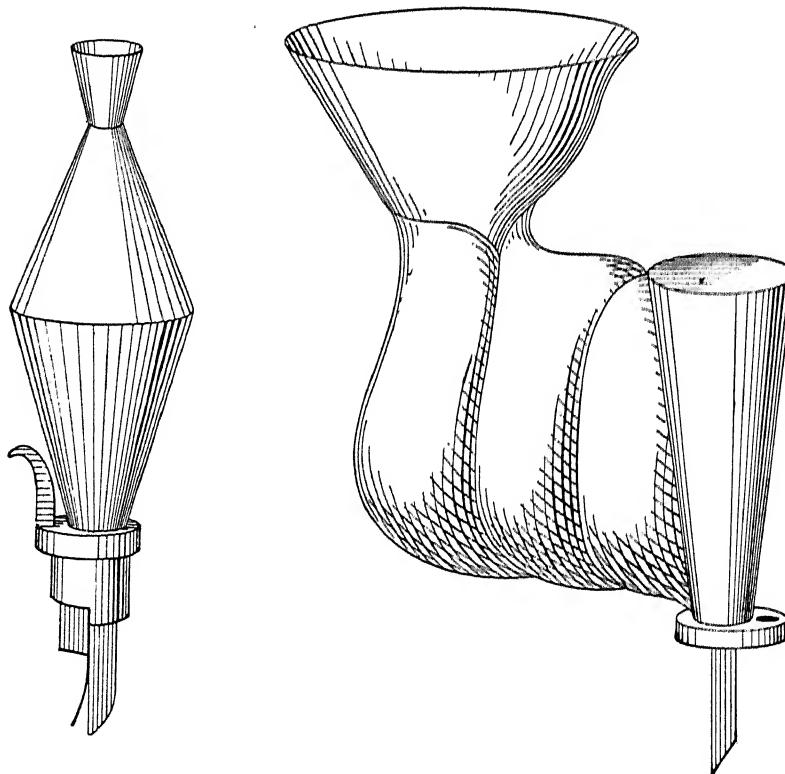
organ be disturbed by a rise of temperature, it is generally the reeds that are made the scapegoats, whereas, as a matter of fact, it is the flue pipes which are mainly responsible for the disparity or pitch. For, metal flue pipes and small wood flue pipes respond to an increase of temperature by sharpening perceptibly. The effect on reed pipes is different. A stop like the Vox Humana will actually flatten, since the pipe exercises but little control over the tongue, which expands under the influence of the heat. The Oboe, on the other hand, with its long and slender tube, will remain fairly well in tune, the rarefaction of the air column compensating for the expansion of the tongue—the one tending to raise the pitch, the other to lower it. Between these two extremes lie stops such as the Horn, Trumpet and Tuba, of larger scale and shorter body than the Oboe.

Deprived of its pipe, a reed will emit a thin, wheezing sound. The pipe, tube or body (as it is variously called) is superimposed, not for the purpose of determining the pitch of the reed, but in order to act as a resonator and to qualify the tone. The pipe is, therefore, so adjusted that the vibrations of the air column in it shall approximately correspond in pitch with the note of the reed tongue, though, for various reasons, not always exactly. Reed stops of an orchestral or imitative character usually have short-length bodies (see CLARINET, ORCHESTRAL OBOE, VOX HUMANA). These short-length pipes are employed as resonators and possibly to reinforce certain harmonics, but, generally speaking, the determination of their length rests on traditional and empiric grounds rather than on a scientific basis.* The curtailment in length of their pipes is one of the main reasons why such "fancy" stops are so apt to get out of tune, for the air column in the pipe has no control over the vibrations of the tongue. In pipes of full length the vibrations of the tongue are, to some extent, governed by the column of air in the pipe. Should an abnormal rise of temperature occur, the point at which the pulsations of the resonant air column and the vibrations of the tongue are no longer able to synchronize will be marked by the reed "flying off" its note. Large pedal reeds and Diaphonic valvular reeds, voiced and regulated "close" (*i.e.*, smooth), are peculiarly liable to this distressing defect. As a temporary remedy, the recalcitrant pipes may be tuned slightly flat, if the wider opening of the tuning slot does not prove effectual. Sometimes the "flying off" of a reed is occasioned by the fortuitous influence of some definite volume of air enclosed by the boot. It may then be cured by piercing a hole in the boot, and if the waste of wind be likely to prove excessive, the perforation may be covered with a leather membrane. For pneumatic starter for 32 ft. reeds, see TROMBONE.

* The scientific aspect of reed voicing is, nevertheless, dealt with in Pastor Allihn's edition of "Töpfer," in a manner interesting and comprehensive, if now—so far as modern English work is concerned—somewhat archaic.

Regal—The Regal was originally a keyboard reed instrument. The date of its invention, none the less than the origin of its name, is obscure. Some refer it to the XIVth or XVth century, others, to the XIIth; but there is little evidence to support the view that this last named date is not fictitious.

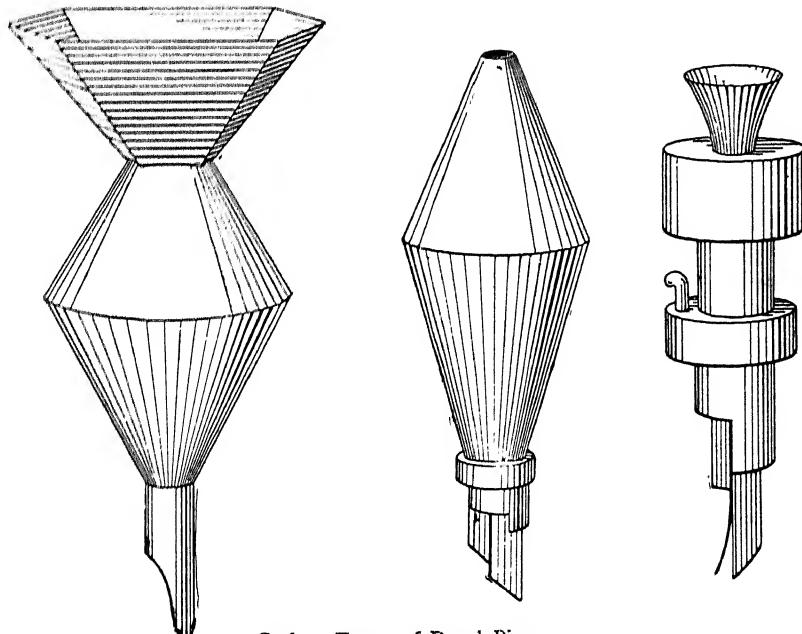
The derivation of the name is still a puzzle to antiquarians. It is probably inspired by the fact that the instrument was extensively used in royal processions. There was an Italian instrument named Rigabello, from which Dr. Rimbault triumphantly derived the title. He omitted, however, all enquiry into the origin of this fresh name, which, in all probability leads us round in a vicious circle back again to the starting point. One of the earliest representations of a Regal occurs in the famous series of woodcuts, known as the Triumph of the Emperor Maximilian, drawn by Hans Burkmeier in 1516. The instruments therein represented are a Positif organ and a Regal, mounted on a car in the procession. The



Curious Forms of Regal Pipes.

Regal displays weights on the bellows (the first known instance), and two pipes of the Knopf-Regal type to each note.

The instrument was chiefly employed in religious processions for sustaining or "giving out" the Plainsong melody. The Regal, and the portable flue pipe organs which probably came into use in the XIIth century, received the name of "Portatif" (Lat., *Portare*, to carry), in contradistinction to the larger pipe organs known as Positif (Lat., *Ponere*, to place or fix). The Regal was not introduced as an organ reed until after the Chalumeau (*q.v.*); although it may reasonably be supposed that the distinction in the tone was but slight. It was of 8 ft., and in later times also of 16 ft. and 4 ft. pitch. The invention of the various forms of pipes employed must have taxed the ingenuity of the most fertile imaginative faculties of the day. In those days the art of reed voicing was certainly, as far as regards imitative character capacity was concerned, in a rudimentary stage. For the most part, then, the names may be regarded as mere fancy appellations, the coining of which doubtless afforded scope for a little mild recreation on the part of those responsible for them. A few of the more important varieties of Regal are appended. In addition to these, pipes shaped in most fantastic forms were to be found. Some resembled large shells, others were composed of tubes wound about in all directions.



Curious Forms of Regal Pipes.

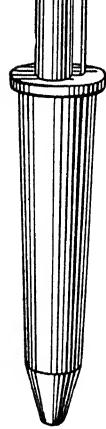
Apfel-Regal—Kopf-Regal. (Ger.) Apfel = apple. (Ger.) Kopf = head.



These pipes were surmounted by an apple-shaped head, pierced with multitudinous small holes, like the top of a pepper pot. The Bärpfeife (*q.v.*) also occasionally displayed this peculiarity.

Bibel-Regal—(Ger.) Bibel = Bible.

One form of the instrument, so constructed as to fold up into the shape and form of a big Bible. The name appears to have been applied in one or two instances to an organ stop—either in ignorance, or perchance, for the sake of association.



Gedämpft-Regal—Gedempft-Regal. (Ger.) Dämpfen = to smother, muffle, stifle. *c.f.* (Eng.) to damp (as of vibrations of strings).

Constructed as the Apfel-Regal; or, composed of inverted conical pipes of very large scale.

Geigen-Regal—(Ger.) Geige = Violin.

When used in the upper octaves with a Quintatön, the Geigen-Regal is said to have resembled the Violin. See **GESANG-REGAL**.

Gesang-Regal—Singend-Regal. (Ger.) Gesang = song
Singend = singing.

A Regal of *cantabile* tone. A variety of Vox Humana. **Apfel-Regal**, **Geigen-Regal** and **Gesang-Regal** were inserted by Julius Antonio at St. Mary, Danzic as early as 1585.

Gross-Regal—16 ft. Double Regal.

Harfen-Regal—8 ft. (Ger.) Harfe = harp. Imitated the harp.
Mulhausen; St. Peter, Lubeck; Stockholm.

Jungfern-Regal—See **VIRGIN-REGAL**.

Kälber-Regal—(Ger.) Kalb = calf. Imitated the calf's lowing!

Klein-Regal—4 ft. Octave Regal.

Kopf-Regal—See **APPFEL-REGAL**.

Knopf-Regal—(Ger.) Knopf = button or knob.

The pipes of this variety possessed heads shaped as a Gothic bishop's mitre.

Messing-Regal—(Ger.) Messing = brass. 16 ft. ; 8 ft.

Possessed inverted conical tubes, fashioned of brass.

Scharf-Regal—(Ger.) Scharf = sharp.

A Regal of sharp incisive tone, similar to the Messing-Regal.

Trichter-Regal—(Ger.) Trichter = funnel.

These pipes were surmounted by funnels of various shapes and sizes. Sometimes they were straight sometimes inverted-conical, sometimes like those of the Cor Anglais, occasionally even with three or four cones, alternately inverted, and rising one above the other.

Virgin-Regal—Virginal. (Ger.) Jungfern-Regal. 8 ft. ; 4 ft. Schloss

Orgel, Hessen ; St. Peter, Görlitz (Casparini) ; Lutheran Church, Elbigen, Materburg ; Königsberg Cathedral ; St. Dominico, Prague.

The origin of this name is doubtful. There are two possible explanations of the use of the word virgin. They are based on the facts (1) that the instrument was used to accompany the Angelus, a hymn to the B. V. M., (2) that it was played upon by young maidens. Mr. T. L. Southgate, an eminent authority on these matters, in a letter to the author expressed his preference for the second view.* Subsequently the name was applied to a stringed instrument.

Regula—(Lat.) = a stop. Regula Primaria. See PRIMARIA.

Reim—(Ger.) Reim = rhyme. The derivation is obscure. 16 ft. Occurs at Bremen Cathedral, as a pedal Trombone.

Resonant Bass—Resonant Cube.

From time to time attempts have been made to reduce the height of pedal pipes by enlarging their width, or by employing reeds with short length resonators. One of the first attempts was made by a watch-maker of Breslau, F. Benke by name. He employed reeds with diminutive resonators—a perfectly feasible idea. Various boxes and cubes have also been made. See DIAPHONE and PYRAMIDON.

Resultant Bass—See ACOUSTIC BASS.

* The German name for the stop is the Jungfern-Regal. In the writer's copy of the German New Testament, the synonymous word, Jungfrau, is employed to designate the B. V. M. If it can be proved that in neither of the two cases have the words commonly been used interchangeably, then the evidence would seem to bear against the former interpretation, given above. But this theory is advanced only tentatively.

Retreating Reed.

A variety of reed stop experimentally tried by German builders, and also by Mr. Hope Jones, to whom the above name is due. In the retreating reed the tongue is fixed on the inner side of a frame corresponding to the ordinary shallot. An experimental model was shown at a lecture delivered in Edinburgh before the Incorporated Society of Musicians.

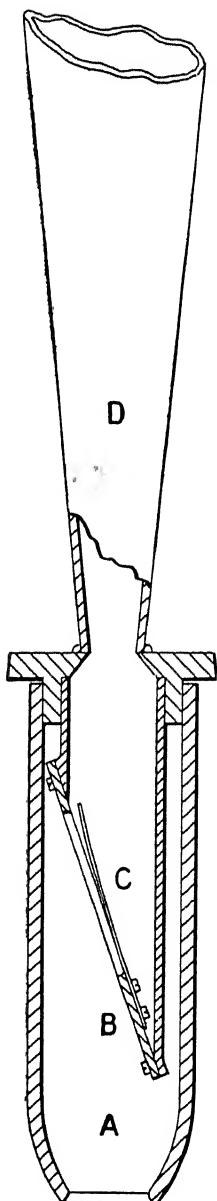
Retusa—See **Vox RETUSA**.

Ripieno—(It.) = chorus. An Italian term for Mixture work.

Rohr-Bordun—See **ROHRFLÖTE**.

Rohrflöte—Rohr Gedeckt. (Fr.) Flûte-à-Cheminée. (Eng.) Chimney Flute. *Anglice* Rohrflute. (Ger.) Rohr = reed. 8 ft.; also 16 ft.; 4 ft.; rarely 2 ft.

The original Rohrflöte was a metal pipe, covered at the top with a flat lid, from the centre of which rose a narrow tube or chimney. The similarity of this tube to a reed (not organ reed) occasioned the name of the stop, which, then, has no connection with any supposed reediness of tone, as some writers have imagined. The tone of the Rohrflöte is brighter and less thick than that of a pipe entirely stopped. As made by the old English builders, Snetzler in particular, fashioned of thin metal with wide chimneys and lightly blown, the stop yielded a tone frequently of the most charming character (e.g., St. Andrew, Nottingham; Snetzler organ rebuilt by Conacher). The pipes were tuned by the highly unsatisfactory method of shading the mouth with long ears (see **BELL GAMBA**). The pipe here illustrated, however, displays ears of ordinary shape, and a sliding “canister” top for tuning purposes. Now-a-days, the metal chimneys are generally dispensed with, and the Rohrflöte is, to all intents and purposes, identical with the pierced Lieblich Gedeckt. The chimney is formed by the stopper handle, and the stopper itself, lined with cork, is fitted into the pipe. In this manner the pipes are more easily and rapidly made, and more satisfactorily tuned. The old

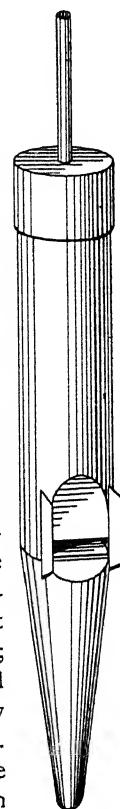


“Retreating Reed”
(Hope-Jones).

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chimneys, also, were liable to be knocked off during tuning operations. The stoppers are usually pierced from about tenor C upwards. Above this note they are made out of a single piece of wood. If the chimneys be carried down to the lowest note, the tone of the bass is apt to acquire a touch of the Quintatön quality. A variety of Rohrflöte of large scale and furnished with wide chimneys, was known in Germany as Hohlschelle (*q.v.*). Of late years the scale of the Rohrflöte has been much reduced, both in this country and abroad. In England, indeed, it is not now made of full scale, though still occasionally in Germany. In the latter country, also, double-mouthed Rohrflötes were not unknown. The French Flûte-à-Cheminée is a large-scaled Chimney Flute of brilliant and liquid tone (see FLÛTE COUVERTE).

The influence of the chimney on the tone of half-stopped pipes—as those of the Rohrflöte class are termed—presents a problem of great interest. The wider the diameter of the chimney, the more close to that of an open pipe will be the tone. In the "Nova Acta der Kaiserl.-Leop.-Carol. Deutschen-Akademie der Naturforscher" * occurs a very interesting article on the Rohrflöte by Dr. R. Gehrhardt. Dr. Gehrhardt's investigations may be summarized as follows:—If, with constant diameter, the chimney be lengthened, the pitch flattens; if now the diameter be increased, the pitch will be raised again. Should the stopper be inverted, so that the chimney protrudes into the pipe, the pitch will remain unaltered. The node of an open pipe is practically equivalent to the stopper of a closed pipe. The Rohrflöte is partially open and partially closed, and Dr. Gehrhardt found that the vibrations resulting from the two intercommunicatory spaces gave rise to inharmonic upper partials (*i.e.*, overtones not present in the ordinary harmonic series), lying closer to each other and increasing in strength, as the size of the chimney was enlarged. We may therefore regard the Clarinet Flute (*q.v.*), with its wide chimney, as owing its peculiar tone in some measure to the presence of these inharmonic upper partials. If a pin-hole be perforated in the lid of a "canister-topped" Gedackt, the pipe will go off its speech, since the rarefaction at the top cannot take place. Various peculiar effects can be obtained by experimenting with half-stopped pipes. The chimneys may be altered in width or length, they may be produced inside as well as outside the pipe, and so on *ad infinitum*. (see also CONE GEDACKT).



Rohrflöte
(old form).

Double Rohrflutes with chimneys to the lowest note are exceedingly rare, nor, indeed, does any material advantage accrue from piercing the stoppers of such large pipes. A stopped double, with the stoppers of the upper notes pierced, is sometimes named Rohr-Bordun. M. Débierre, of Nantes, however, makes a speciality of compact organs, in which he produces two or three low notes from one pipe. The author has in his possession one of these **Polyphone Pipes**, made by M. Débierre. It was presented to him by his friend, Mr. J. C. Casavant, the celebrated Canadian organ builder, of St. Hyacinthe, Quebec. The pipe is a closed one, with the stopper in the usual position at the top. But down the front of the pipe extends a rectangular wooden chimney, with the end, reaching nearly down to the mouth, unclosed. This chimney opens, of course, into the main pipe, at the top. In it are bored two orifices, one on each side, at set distances apart. The said holes are covered by a circular pallet or disc, carried on the arm of a motor bellows. The lowest note of the pipe is that given by the pipe with both of these holes closed. The next note, a semitone higher, is obtained by admitting wind to the motor, which uncovers the hole lowest on the side of the chimney. The highest note, a semitone sharper than the last, is obtained by admitting wind to the other motor. Thus, to obtain one or other of the alternative notes, it is only necessary, simultaneously with the admission of wind to the pipe, to allow it to pass into a channel connected with the interior of one of the motors. The pipe is provided with a beard, in the form of a fender, shading the mouth. Requiring, as it does, mechanism of the simplest character only, it will be evident that in this device we have a fruitful source of economy.

Rohr-Gedeckt—See ROHRFLÖTE.

Rohr-Nasat—A Twelfth of Rohrflöte pipes.

Rohrschelle—(Ger.) Rohr = reed; Schelle = bell. See HOHLSCHELLE.

Roller—See BEARD.

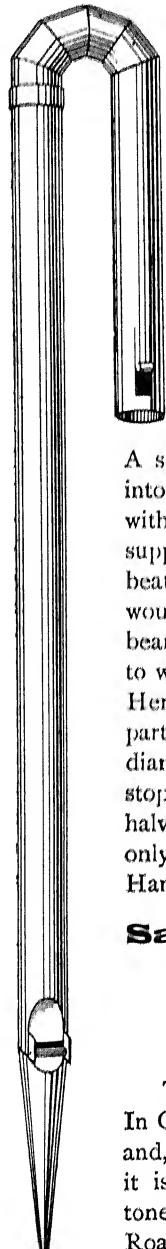
Rossignol—(Fr.) = nightingale. See AVICINIUM.

“Rustic”—This name occurs in some of the specifications given in Hopkins' and Rimbault's treatise. See BAUERFLÖTE.

S.

Sackbut—32 ft.

The name was applied to the 32 ft. reed in the organ at York Minster (Hill, 1833). Though the first reed stop of that pitch to be introduced into an English organ, it was not removed until the recent reconstruction of that instrument (Walker, 1903). The Biblical Sackbut was a variety of harp of Oriental origin. The derivation of Sackbut is obscure. Webster



Salicional
(rolled), with
double mitre.

suggests (Spanish) *sacar* = to draw out, *buche* = maw, crop or stomach. *Sacarbuche*, that which exhausts the stomach. Skeat, in endorsing this derivation, quotes the old French term *sacquer* = to draw out hastily.

Sadt—The specification of an organ drawn up by "Father" Smith for the Temple Church contained the following item: "A Sadt of Mettle—61 pipes, 06 foote tone."

The Sadt was a variety of Gemshorn.

Salicinal—A corruption of Salicional.

Salamine—8 ft.; 4 ft.

The Salamine is said to be a stop in tone midway between a Dulciana and a Salicional, and extremely soft. A specimen was introduced by Messrs. Forster & Andrews into their organ at All Souls', Halifax. It was arranged to beat with the Vox Angelica. The effect of the combined stops was supposed to be suggestive of the distant effect of the waves beating on the shore of the Island of Salamis! The Salamine would, therefore, seem to have been merely an Echo Dulciana bearing a somewhat poetical appellation. The organ referred to was recently rebuilt by Messrs. Norman & Beard. To Mr. Herbert Norman the author is indebted for the following particulars of the Salamine:—Tenor C compass; T. C. pipe, diameter, $1\frac{7}{8}$ in.; width of mouth, $1\frac{3}{8}$ in.; cut up $\frac{3}{8}$ in. The stop is scaled to the 17th note throughout (*i.e.*, the diameter halves on the 17th semitone), and speaks on a pressure of only $1\frac{1}{2}$ in. The *name* Salamine was also used by Meyer, of Hanover, at the Market Church, and St. John, Hanover.

Salicional—Salicet (Ger.) also Salizional and (archaic) Weidenflöte. (Lat.) Salix; (Ger.) Weide = willow. The name still survives in the "sally-willy," a rustic title for willow. See CHALUMEAU. 16 ft.; 8 ft.; 4 ft.; abroad very rarely 2 ft.

The Salicional is represented by stops of diverse character. In Germany it is a somewhat horny-toned string stop, bearded and, like the Gamba, formerly of dilatory speech. In France, it is sometimes made as a quiet Diapason of very *cantabile* tone. There is a very beautiful stop of this type at Derby Road Chapel, Nottingham (Conacher), voiced by the late M. Rheinburg, a distinguished voicer of the firm of Cavaillé-Coll. In England the Salicional is virtually a Dulciana with

some interest infused into it. It is generally made of spotted metal. With regard to the question of slotting the Salicional, the custom of English builders varies much. The majority slot the Salicional and not the Dulciana. But the Salicionals of Mr. Lewis, which may, perhaps, be said to represent the ideal type, are not usually slotted. At any rate the aim of the voicer should be to render the stop stringy, but neither keen nor horny. Some builders erroneously accord the name to what is virtually a soft String Gamba. The Salicionals made within the past few years by Messrs. Conacher are virtually a very pleasant type of Viole Sourdine. Attention has recently been drawn to a variety of Salicional which was supposed to speak somewhat as a Quintatön, though composed of open pipes. The author was informed that an example of this variety—"though an imperfect specimen"—existed at the Lutheran Church, Leman Street, E. (Walcker). On visiting this instrument he found that, heard in the interior of the box, the Salicional spoke the octave very distinctly with the ground tone, but that the Twelfth was in no way prominently developed. The type of Salicional is neither known to German organ builders, nor mentioned in Allihn's work. If it existed at all, the octave was presumably likewise included, and the effect would possibly be not unlike that of a badly voiced or overblown Violone, which sometimes performs the same trick. But the said species of Salicional most probably owes its genesis to some rather vague and purposeless remarks of Hamel, who, whilst seemingly reviewing the classes of organ tone in the strictly orthodox and conventional manner, appears to group together the Quintatön and the Salicional under the same category. A double-mouthed Salicional occurs in the specification of the organ at Lund Cathedral, Sweden. The Contra Salicional forms an ideal Choir organ double. The 4 ft. Salicional, generally known as Salicet, is rare in the country. It is usually found on the Choir organ or in the Swell of small instruments. St. Katherine's Convent, Queen's Square, W. (Beale & Thynne). *Scale*.—A Lewis 8 ft. specimen measured at CC $3\frac{3}{4}$ in. in diameter, the mouth being $1\frac{7}{8}$ in. wide and cut up $\frac{3}{4}$ in. It was provided with a bridge.

SANFT—(Ger.) = soft.

Sanftflöte = Vienna Flute, Flauto Amabile, or Lieblich Flöte.

Sanftgedackt = Still Gedackt.

SAXOPHONE—16 ft.

A stop imitative of the instrument named after Sax, its inventor. The quality of tone is difficult to define. It partakes of the Clarinet, Bassoon, and 'Cello. The *name*, Saxophone, is applied by Mr. Casson to the 16 ft. Clarinets (tenor C compass) in his organs. It is claimed that organists, unaccustomed to the Double Clarinet, are apt to take for granted that any stop bearing the familiar name Clarinet is of unison pitch. Chalumeau,

employed as the word is in orchestral terminology to designate the lower compass of the Clarinet, would perhaps be a more appropriate term. There is, however, a stop named *Contra Fagotto*, but in the upper portion of its compass very closely representing the *Saxophone*, voiced by Mr. John H. Compton, at Hucknall Torkard, Notts. The 16 ft. pipe measures $4\frac{3}{4}$ ins. There is also a *Saxophone* stop at Holy Trinity, Marylebone, W. (Vincent). In tone it resembles a *Cor Anglais* with a touch of *Tuba* quality (not power) added. See also *KEROPHONE*.

Scarpa—4 ft. A *Clarion* at Salzburg.

Schalmey—*Schalmei*. See *CHALUMEAU*.

SCHARF—(Ger. = sharp). (1) A prefix signifying “of sharp incisive tone.” (2) Sharp Mixture.

Scharf-Regal—See *REGAL*.

Scharfflöte—A Flute of bright incisive tone.

Schlangenrohr—(Ger.) *Schlange* = serpent (*q.v.*). *Rohr* = reed or tube.

Schnarrwerk—(Ger.) *Schnarren* = to grate or rattle.

An archaic German term applied to denote reed work, collectively. *Töpfer* humorously remarks that reeds may be divided into two classes—*Schnarrwerk* and *Narrwerk* (tomfoolery)! *Schnarrwerk* sometimes designated a form of *Regal*.

Schön—(Ger.) = beautiful. A prefix synonymous with *Lieblich*:—*Schöngedeckt*, *Schönprinzipal*.

Schreier—*Schreierpfeife*, *Schryari*. (Ger.) *Schreien* = shriek, screech or scream. A high-pitched screaming mixture. Fortunately obsolete.

Though the husk be flown, the kernel, nevertheless, remains in the principle, or rather lack of principle, of the III rank screeching apparatus, still an arresting feature of too many English organs. Such stops should be labelled *Cave!* to be used with care! At the *Bärfusskirche*, Erfurt, the stop was a sharp-toned *Spillflöte*. At St. Ulrich, Magdeburg, occurred a *Kleinschreier* (Ger. *Klein* = small).

Schufflet— $1\frac{1}{2}$ ft. An octave Twelfth. St. Lambert, Münster (former organ). Derivation unknown.

SCHWEBUNG—(Ger.) = Tremulant. (Ger.) *Schweben* = to soar or hover.

Schweizerflöte—*Schweizerpfeife*. 8 ft.; occasionally 4 ft.; 2 ft.; 1 ft. (Ger.) *Schweiz* = Switzerland.

The name, like Vienna Flute, has no historical basis. The *Schweizerflöte* would seem originally to have corresponded to the German *Gamba*. *Locher* mentions a specimen at Magdeburg Cathedral. Later the name was applied to a small-scaled bearded *Gamba* of very keen penetrating tone.

Schwiegel—Schwiegelpfeife, Schwägel, Stammentinpfeife. Mr. Matthews derives the name from an old German word, Suegala = pipe. Stammentin is probably derived from (Ger.) Stamm = stem (suggested by the peculiar shape of the pipe). See SPILLFLÖTE. 8 ft.; 4 ft.; 2 ft.

The Schwiegel was practically identical with the Spillflöte. But Schlimbach describes it as a Flute stop, of the scale of the Querpfeife, and voiced like the Bauerflöte. Adlung and Töpfer, however, support the other definition. A specimen of the Schwiegel existed until quite recently at the Kreuzkirche, Dresden (Jagermann).

Septadecima—(Lat.) = seventeenth. Tierce.

Septime—(Lat.) Septimus = seventh. See FLAT TWENTY-FIRST.

Seraphine—For derivation, see SERAPHON. See PHYSHARMONIKA.

SERAPHON-REGISTER—The word Seraph is generally derived from Hebrew, Sāraph = to burn. It has reference to the Biblical “flaming angels.” (Gr.) $\phi\omega\eta\eta$ = voice.

The name employed to denominate a class of stops of novel construction invented by Herr Weigle of Stuttgart. They are described under DOPPELFLÖTE. A Seraphonflöte 8 ft., supplied by Herr Weigle, occurs at St. Sebalduskirche, Nürnberg (Strebel, of that city).

Serpent—A double Bassett Horn. 16 ft. Ulm Münster (Walcker, 1856). Sanctissimo Crocifisso, Como, (as Serpentino).

The instrument of the name (obsolete) possessed a curled wooden tube about 8 ft. in length. Hence the name. In order further to enhance the resemblance, the body of the instrument was sometimes even decked with green scales, the addition of two fiery eyes serving to render complete this melodramatic fantasy.

Sesquialtera—Sesquialtra. Originally a II rank Mixture composed of Twelfth and Tierce, or (rarely) Quint and Tierce. The component ranks of the stop were thus separated by the interval of a sixth, to which fact the derivation of the name is supposed to be due. (Lat.) Sextus = sixth. Alter = another, one of two, different.

In this country the name Sesquialtera became applied to a III rank Mixture sounding, in the bass, 17, 19, 22 above the unison. It was also used to designate Mixtures of IV or V ranks. The name is falling into desuetude. See MIXTURE.

Sexte—(Lat.) Sextus = sixth.

A two-rank Mixture, composed of a Twelfth or Tierce on one slider. The interval between the two ranks is that of a sixth.

Sharp Mixture—(Ger.) Scharf.

A Mixture composed of pipes of high pitch and acute tone, employed to add brilliancy to the full organ. It should comprise such ranks as the Tierce and Septime. See MIXTURE.

Sifflöte—Onomatopœic. 2 ft.; 1 ft.

A high pitched Hohlföte.

Slotted—See PIERCED.**SOLO.**

A prefix signifying that a stop to which it is attached is intended for Solo use; e.g., Soloflöte, Solo Diapason. The prefix sometimes also serves to indicate a high pressure flue stop of powerful tone; e.g., Solo Gamba, 8 ft.; Solo Prinzipal-Flöte, 8 ft. (a powerful flutey Diapason), at St. Peterskirche, Frankfurt (Walcker).

Song

A prefix implying a *cantabile* character, or a meaning synonymous with Solo (see above); e.g., Song Trumpet (Brooklyn Tabernacle, U.S.A.).

Sonnenzug—(Ger.) Sonne = sun, Zug = pull.

A stop setting into motion an imitation sun suspended over the organ. Garrison Church, Berlin (Joachim Wagner).

Sordun—Sourdin. (Lat.) Surdus = quiet or subdued (hence also deaf). 16 ft.; 8 ft. See RANKET, GEDÄMPFT-REGAL, also VIOLE SOURDINE.**Spillflöte**—Spindle Flute. (Ger.) Spill = spindle. 8 ft.; 4 ft.; 2 ft.

The Spillflöte was invented prior to the middle of the XVIth century. The pipes of this stop are cylindrical in form, surmounted by a cone. The cone tapers almost to a point, leaving but a small opening at the top. This peculiarity of construction imparts to the pipe the appearance of a spindle, whence the name. The tone is bright and subdued, but scarcely of any distinctive character. See also SPITZFLÖTE.

Spitzflöte—Flauto Cuspido. (Ger.) Spitz = pointed, cf. (Eng.) Spire.

The German Spitzflöte was originally synonymous with Spillflöte (*q.v.*). Indeed *spill* and *spitz*, or (Eng.) *spindle* and *spire* are derived from the same root. The radical sense is probably that of a splinter, which is frequently taken as the type of anything thin and pointed. The English, and an alternative later German, type of Spitzflöte is described under Cone Gamba. A double-mouthing Spitzflöte occurred at St. Mary Magdalene, Breslau.

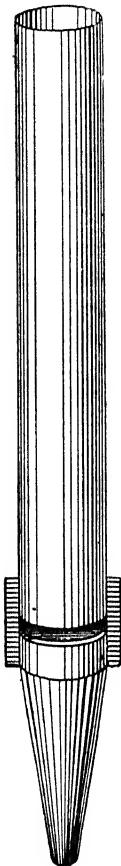
Stahlspiel—(Ger.) Stahl = steel. See CARILLONS.**Stammentinpfife**—See SCHWEIGEL.

Stark—(Ger.) = strong. A prefix.

Stark-Gedackt—A Gedeckt of large scale and powerful intonation.

Stentorphon—(Gr.) *Στέντωρ*. Stentor was, in Greek legend, a herald before Troy, whose voice, according to Homer, was as loud as the aggregate voice of fifty men. *φωνή* = voice. 8 ft.

(1) A very large-scaled Flute used in America and Germany. It is made of either wood or metal, and sometimes with double mouths. The tone is very powerful and full. As to whether such tones are artistic or merely blatant and vulgar depends entirely on their mode of treatment. If made of the Tibia Plena style, stops of this class form a valuable adjunct to large organs. Cincinnati, U.S.A. (Hook & Hastings); Collegiate Church, New York (Odell); Church of Our Lady of Perpetual Succour, Boston (Hutchings Votey Co.). The Stentorphon has also been used in Germany by Voit, of Durlach (e.g., in the large organ in the magnificent concert hall at Mannheim). (2) A special stop invented and patented by Herr Carl Weigle, of Echterdingen, near Stuttgart. The mouth extends half-way round the pipe, as in the case of some steam whistles. The name Stentorphon is usually reserved for the Diapason variety of the stop. The only example in this country is in the large chamber organ built by Messrs. Conacher for Mr. H. G. Harris, Castle House, Calne, Wilts. It speaks on 8 in. wind. Other stops are likewise made by Herr Weigle of this pattern. In the organ built by him in 1895 for the Liederhalle, Stuttgart, occur the following flue stops, on 9 in. wind, constructed according to this style:—Stentorphon, 8 ft.; Grossgedeckt, 8 ft.; Solo-Gamba, 8 ft.; Solo-Flöte, 8 ft.; (pedal) Sub-bass, 16 ft. The Stentorphon, when tested alone, is of defective speech and apt to overblow; the treble, also, is not very powerful. It is considerably more effective, and speaks better in combination. The Gedeckt, which measures actually 8 in. in diameter at CC (8 ft. tone), is of full liquid tone, and in no way objectionable. The pedal Sub-bass is a powerful, weighty stop. The Gamba is not good. All appear rather windy



Stentorphon
Diapason.

to a listener close to the organ. The full organ is very brilliant and of immense power, but could not be endured for any protracted length of time. At Einsiedeln Monastery, Switzerland, Herr Weigle introduced the following high pressure flue stops:—Stentorphon, 8 ft.; Gedackt, 8 ft.; Fugara, 8 ft.; Geigenprinzipal, 4 ft.; Soloflöte, 8 ft.; Gamba, 8 ft.; Violine,

8 ft.; a pedal Contrabass, 16 ft., employed as portion of the 32 ft., and 'Cello, 8 ft. The Flutes, the Violine, and the pedal stop are effective, but the others are not very satisfactory. In both these instruments the power of the full organ is due mainly to the manual and pedal Tubas, voiced on Willis lines, and—though only on 9 in. wind in the one organ, and 11 in. in the other—of prodigious power. Messrs. Telford have introduced into the organ built by them at Letterkenny Cathedral, Ireland (1900), a Flute and a Gamba of the Stentorphon class. The Flute measures CC, 7 in., and the Gamba CC, $3\frac{3}{4}$ in. They are bearded.

From the above criticisms it will be evident that in full organ, and when well covered with powerful reed work, the effect of these stops is satisfactory enough. But for individual or ordinary combinational use—with the possible exception of the Flute and pedal varieties—they are altogether too coarse and hard in tone. Moreover, Stentorphon stops are terrible wind gourmands. Tone sufficiently massive and pervading to satisfy the requirements of large buildings, albeit essentially musical and free from coarseness, can be obtained by the employment of large-scaled stops with leathered lips (see LEATHERED LIP). There would seem little objection to the use of one or two stops of the Stentorphon class in an organ of the first magnitude, but the purpose for which they were professedly designed—that of securing prodigious power from small organs—is false, fatally false, in principle. The result savours too palpably of the *deux ex machinā*. As was pointed out under Diapason (Section 3), organ tone cannot satisfactorily be built up by the mere conglomeration of a few stops of extreme tone. True, much can be done by the use of the aforesaid leathered stops to render moderate-sized instruments more effective than they usually are. In spite of the fact that these stops are deceptive in tone, and are, in effect, much more powerful than they would at first seem to be, even they, nevertheless, demand extreme care in their treatment—much more Stentorphons. Herr Weigle's patent rights in England for the Stentorphon class of register are now owned by Herr Laukhuff, of Wickersheim, the well-known pipe maker. See also SOLO, DOPPELFLÖTE.

Stern—See CIMBALSTERN.

Still—(Ger.) = quiet.

A prefix implying softness of tone, the reverse of *stark*.

Still-Gedackt—8 ft., 4 ft.

A quiet-toned Gedeckt.

Stopped.

A prefix denoting that the pipes of the stop to which it is attached are closed at the top with a stopper. But see GEDECKT.

Stopped Bass.

For reasons of economy, the bass to a stop of open pipes is sometimes formed of closed pipes, but the practice is now resorted to less frequently than formerly. In organs built some score of years ago, it was not uncommon to find one Stopped Bass doing duty for three or four 8 ft. stops in the Swell organ, and, until quite recently, it was customary to groove the Dulciana into the Stopped Diapason Bass—much to the detriment of the effect of the stop.

Stopped Diapason—8 ft., also 16 ft., 4 ft. See **GEDECKT**.

Double Stopped Diapason = Lieblich Bordun.

Stopped Flute—An octave Lieblich Gedeckt. See also **NASON**.**Stopped Harmonic Twelfth**—See **HARMONIC STOPPED TWELFTH**.**STOPPED METALLIC**—See **METALLIC FLUTE**.**Storm Pedal**—Thunder Pedal. (Fr.) Effets d'Orage, or Tonnerre. (Ger.) Sturm, or Donner. (Sp.) Imitacion de Tempestad.

The Storm Pedal probably originated in the old Drum Pedal and the German Hummel. As made by Cavaillé-Coll it was a pedal which, on depression, drew down successively six or seven notes from the bottom of the pedal board upwards. The effect, as may well be imagined, is realistic—particularly when the 32 ft. reed is drawn. As Mr. Robertson remarks, the contrivance is rather superfluous, since a really imposing effect can be got by sitting on the keys! Manchester Town Hall; Sheffield Albert Hall; Carmelite Church, Kensington (formerly), (all by Cavaillé-Coll); Seville Cathedral (Aquilino Amézua, 1903).

String Gamba—See **GAMBA**.**Suabe Flute**—Presumably from (Lat.) *Suavis* = sweet, luscious. 4 ft.

A wood Flute, invented by Mr. William Hill. It is generally constructed with an inverted mouth. Occasionally, the Suabe Flute is made of metal. The tone is bright and clear, the stop being practically a 4 ft. Waldflöte. The Suabe Flute is usually found on the Choir organ.

Suavial—Suabile. (Lat.) *Suavis* = sweet, luscious. 8 ft.

A soft-toned Geigen Principal. Locher refers to a specimen at the French Church, Berne.

Sub—(Lat.) = under.

A prefix synonymous with Contra or Double. But see **SUBBASS**.

Subbass—See **BOURDON**.

Sub-Bourdon—See **BOURDON**.

Super—(Lat.) = above.
A prefix synonymous with Octave.

Superoctave—The octave above the octave. A name for the Fifteenth.

The Octave Coupler is sometimes rather misleadingly named Super-octave Coupler.

Swell Box.

Although not an organ stop, the Swell box nevertheless exerts so great an influence on organ tone that a few brief remarks relative to it would seem to be essential to the realization of that comprehensive treatment of tonal matters to which this work aspires. The swell box is a wooden box in which are enclosed certain stops of the organ. The front is provided with shutters capable of being opened by a pedal on the same principle as a Venetian blind,* by means of a pedal operated by the performer. At Worcester Cathedral Mr. Hope-Jones employed a brick swell box, and at other churches boxes of lath and plaster. There is also a box lined with cement at the Monastic Church, Einsiedeln, Switzerland, introduced at the suggestion of His Grace the Abbot of Einsiedeln. The solidity of the box, and the smooth reflecting surface secured by this means, tend materially to increase the effectiveness of the swell *crescendo*. “Some years ago, at Amsterdam Musical Exhibition, was shown a three-manual organ, each department of which was enclosed in a separate swell box. The intention was that the tone of one manual might be merged into that of another, and a sort of tonal dissolving view thus be created. Later, much interest was aroused when Mr. G. A. Audsley (in *The English Mechanic*) suggested a development of this idea as the normal basis of a concert organ. His scheme was to enclose Flute tone in one box, String tone in another, and so forth.”† The plan is adopted in a very modified form in the monster organ designed by Dr. Audsley for the St. Louis Exposition, 1904 (Art Organ Co., Los Angeles, California).

Whilst gladly recognizing the fact that these dissolving tonal effects are often of a most pleasing nature, particularly in the case of *Célestes* (*sub q.v.*) of varied character, the adoption of any such system as the

* The Venetian blind, indeed, is supposed to have derived the name from its similarity to the swell applied in 1769 to the harpsichord by a Venetian, Birkat Shudi, one of the founders of Messrs. Broadwood's famous pianoforte industry. The Venetian swell was first adapted to the organ by Green, and soon superseded the original so-called Nag's Head Swell.

† From the author's “Tonal Design in Modern Organ Building, pp. 19 and 20.

normal basis of tonal design would to the author seem to be entirely subversive of all true principles thereof. At the very outset we are confronted with the fact that not only would an entire revolution in the music written and arranged for the organ be rendered necessary, but that a fair-sized instrument constructed on such a system would be entirely beyond the control of any single performer. Nor can stops be enclosed in a swell box without suffering some deterioration of tone. The box acts as a kind of "wet blanket" on the tone of the pipes it encloses. Although this may to some extent be obviated by the employment of increased wind pressure, it nevertheless remains undesirable that enclosure be recognized as the normal practice; the fresh tone of the unenclosed Great organ should always dominate the instrument. Another flaw in the scheme rests in the nature of the *crescendo* itself. In the orchestra the *crescendo* involves not merely augmented power, but also, owing to the increased development of the upper partials, a very material change of *timbre*. In the swell *crescendo* we find certainly a fine increase of power, and ('tis true) a slight variation of *timbre*, or "clang-tint" as Tyndall called it, for the swell shutters *do* influence the upper partials to a marked extent,* but not by any means sufficiently to free the *crescendo* of its all too dynamic attributes. It is curious to notice how this striving after true expression has unconsciously manifested itself in the introduction into the Swell organ of string-toned stops—stops rich in upper partials. It is on this account that the 4 ft. Geigen Principal, and the Quintatön family constitute such valuable Swell stops.

But even if this *catena* of evidence be deemed insufficient, there remains the crowning objection that no facility exists for accentuating individual notes of a chord. Obviously, the swell *crescendo* increases the power of the whole chord. When it be recalled how objectionable is this drawback—only partially surmounted—in the case of the various mechanical pianoforte-playing attachments, it will at once be realized that the objection is fatal. "I do not deprecate the Swell-box; as a matter of fact it is an excellent thing that an organ is not expressive in the sense referred to, for much of its dignity and sublimity would vanish. But I have invariably found that in acoustically magnificent edifices, such as at York, Ulm, Strassburg, Einsiedeln, above all Haarlem, the finest *crescendo* effects are obtained, not with swell boxes, but by the building up of stop upon stop in rapid succession."† In a building of unfavourable acoustical

* This theory finds strong confirmation in the behaviour of the 8 ft. Solo Harmonic Flute in the new instrument at York Minster (Walker, 1903). With the box closed the stop appears tolerably free from overtones, but on opening the shutters the fifth upper partial (sounding a twelfth above the note speaking) is brought out most prominently.

† *Ibid.* p. 21.

properties, on the other hand it is often an excellent expedient to enclose the greater portion of the organ. From the above remarks it is not by any means to be implied that the organ is a soulless, expressionless instrument. By means of the dynamic Swell *crescendo*, rapid stop manipulation, and bold phrasing, it is possible to infuse considerable vitality into organ music.

Swiss Flute—See SCHWEIZERFLÖTE.

Syringa—4 ft. An ordinary metal 4 ft. Flute in the Exhibition organ, York, bears this name. Why it received such an extraordinary title is unknown; it has even been suggested that the stop was provided in case of fire! Possibly the name was a corruption of Syrinx, the Pandean Pipe, or (Gr.) *συρίγγιον*, diminutive of *σύριγξ*.

T.

Tambourine—Occasionally found in ancient specifications.

Tapada—(Sp.) = stopped.

Tapadillo—(Sp.) = Stopped Diapason.

Tarantantara.

A name for the Trumpet found in ancient German specifications. The onomatopœic origin of this name is very apparent!

Tenoroon—16 ft.

A name frequently applied in the middle of the last century to a 16 ft. flue stop, usually Bourdon, extending only to tenor C on the manual of English organs. The instrument bearing this name was really a tenor Hautboy.

Tenth—(Lat.) Decima. A Double Tierce, $3\frac{1}{2}$ ft. on manual, $6\frac{2}{3}$ ft. on pedal.

TERPODION—(Gr.) *τέρπειν* = to delight. *ῳδή* = a song.

A Gamba with a very wide low mouth, of keen tone though defective speech. It was invented by the firm of Schulze and first inserted in their organ at Halberstadt Cathedral (1838). The instrument, invented by Buschmann, of Berlin, in 1816, consisted of sticks of wood which were struck with a hammer. The “spit” accompanying the speech of the organ stop was supposed to be representative of this percussion. Such defective speech is fortunately no longer tolerated. Bremen; Wismar, 1840; Lübeck, 1854; Doncaster, 1862; (Schulze). St. Paul, Southport; Brunswick Chapel, Leeds; (Booth, of Wakefield).

Terpomele—(Gr.) *τέρπειν* = to delight. *μέλος* = song.

A free-reed stop inserted at Beauvais Cathedral (1827-29). The pipes were of Euphone shape. The wind pressure was variable at the option of the player, and the stop, therefore, open to expressive use. See CONOCLYTE.

TERTIAN—Terzian. (Lat.) *Tertius* = third.

A Mixture stop found abroad. It consists of Tierce and Larigot. The name is derived from the interval separating its constituent ranks.

TERZ—(Ger.) = Tierce.

Terza Mano—See OCTAVE COUPLER.

Terzian—See TERTIAN.

Theorba—16 ft.

A reed stop included in the specification of the organ at Königsberg Cathedral (1721). The Theorba was a variety of Lute.

Thunbass—Tonbass. An ancient name for Gedackt.

This name probably originated in the fact that stopped pipes are said to be of such and such a length *tone*—Gedeckt, 8 ft. tone.

Thunder—(Fr.) Tonnere. See STORM PEDAL.

Tibia—(Lat.) *Tibia* = a shin-bone, hence leg. It is supposed that originally the Flute was made from the legs of cranes, or other birds. (Pliny, Ep. 16, 36 *seu* 66.) Hence, *per synecdoch.* (Late Lat.) *Tibia* = a pipe.

The Tibia was a Flute giving several notes from the one pipe by means of finger holes; whereas the Fistula corresponded with the Pan's Pipes. The word Tibia has consistently been adapted to the nomenclature of organ stops on the Continent for some centuries. The Tibia Major was used by Schulze at Doncaster (1852). Some very imperfectly informed persons have actually laboured under the strange misconception that its use in such terminology was initiated as a bombastic *coup d'état* on the part of Mr. Hope-Jones! The word Tibia is now used in this country to denote a quality of tone of an intensely massive, full and clear character, first realized by Mr. Hope-Jones, though faintly foreshadowed by Bishop in his Clarabella. It is produced from pipes of very large scale, yielding a volume of foundation tone, accompanied by the minimum of harmonic development. Even from a purely superficial point of view the tone of the Tibia family is most attractive; but further, its value in welding together the constituent tones of the organ and coping with modern reed-work (see DIAPASON, Section 8) is inestimable. It possesses the peculiar faculty of "getting at the back" of all other combinational stops

and of adding to them a cohesion of tone and a dignity so entirely in keeping with the true and ideal character of the "King of Instruments." And, to avoid possible misconception, let it here be stated, once for all, that in thus strenuously urging the need in a non-expressive instrument like the organ, of this massive quality of tone, the modern school of tonal architecture does not for one instant advocate the reduction of the whole foundation of the organ to this standard. Tibia and Diapason are not synonymous terms, and the modern leathered Diapason, whilst preserving a due proportion of fundamental dignity, must act as the predominating influence which shall hold the mean between Tibia, Gamba, and reedwork, blending at the same time with the Principal which constitutes the connecting link between the foundation work and the "upper" work of the organ. One of the cardinal principles of modern tonal design is the abolition of excessive Mixture-work in favour of the process of building up brilliancy from *within* the foundation tone itself. It is, nevertheless, a fatal mistake unduly to sacrifice foundation and dignity at the altar of mere "pyrotechnic" display. The problem is dealt with from various aspects under DIAPASON (Section 4, *et seq.*). In fine, it is only necessary in explanation of the modern attitude, to observe that the rightful claims of neither dignity and purity of tone, nor brilliancy, are disregarded.

Tibia Angusta—(Lat.) *Angustus* = narrow. 8 ft.

A very narrow scaled Flute found in some German organs. It was sometimes bearded, and then known as *Tibia Angusta Barbata* (*sic!*). Akin to Dulzflöte.

Tibia Aperta—(Lat.) *Apertus* = open. See FUGARA.

Tibia Bifara—See BIFARA.

Tibia Clausa—(Lat.) *Clausus* = closed. 8 ft. tone.

The Tibia Clausa is a wood Gedeckt of very large scale, furnished with leathered lips. It was invented by Mr. Hope-Jones. The tone is powerful, and beautifully pure and liquid. The prevailing fault of the modern Swell organ is, perhaps, the inadequacy of the Flutework. One small Gedeckt or Rohrflöte is not sufficient to cope with the modern Gamba and Geigen or Diapason, to say nothing of reedwork. The flutework of too many modern Swells is thin in tone. It was the recognition of this shortcoming which led to the invention of the Tibia Clausa. The Tibia Clausa is to be found in the Swell organ in many of Mr. Hope-Jones' instruments. In U.S.A., St. John's School, Manlius, N.Y.; Park Church, Elmira, N.Y. (Hope-Jones and Harrison). CC, $7\frac{3}{4}$ in. \times $5\frac{7}{8}$ in.; Mid. C, $2\frac{11}{16}$ in. \times $1\frac{13}{16}$ in. Mouth cut up about half its width. See TIBIA, TIBIA MINOR, TIBIA PLENA.

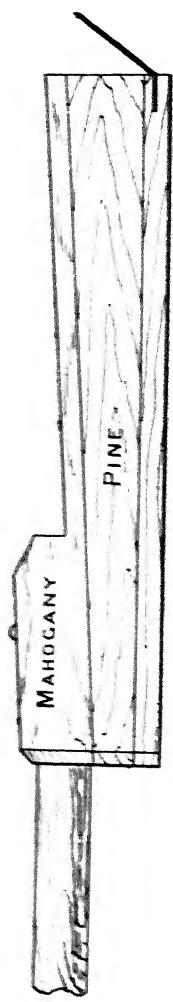


Fig. A—Tibia Dura (original form).
C in Alt.

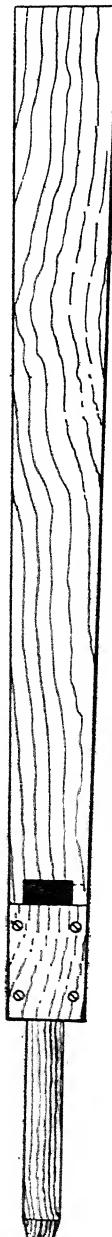
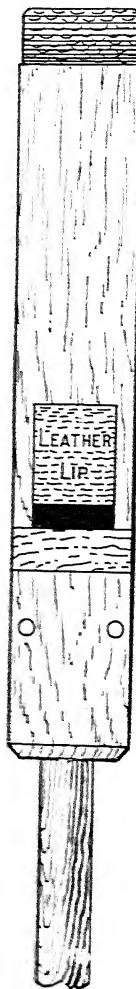
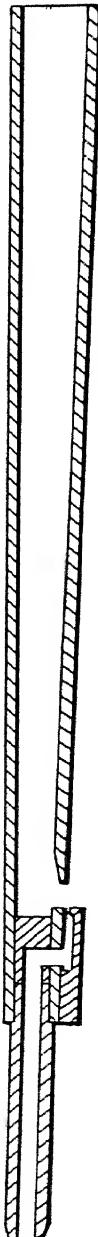


Fig. B—Tibia Dura (present form).
Mid C.



Tibia Dura—(Lat.) Durus = hard. 4 ft.

A stop of Mr. Hope-Jones invention. The original pattern of Tibia Dura was composed of open wood pipes of extraordinary shape. The pipe at the base was broad though shallow, but increased in depth as it ascended. The back of the pipe remained perpendicular, but the front fell outwards at such an angle as to render the pipe square at the top. The sides were set parallel. For some occult reason the pipe-foot was set in the cap. The stop was provided with leathered lips. The sole example of the Tibia Dura, made after this manner, is in the Swell at St. Paul, Burton-on-Trent. The tone of this stop is bright, hard and "searching," and struck the author as very similar to the Jardine Clear Flute. It was a mere probationary and tentative experiment of no intrinsic worth. More recently, however, Mr. Hope-Jones has succeeded in the production of the same tone from a pipe of more reasonable construction. It is made of hard wood, with the mouth on the wide side. The new pattern of pipe is narrow at the base from back to front, but as it ascends both back and front move outwards, though not sufficiently to render the pipe square. The stop is largely used by Messrs. Ingram & Co., of Hereford (successors to Ingram, Hope-Jones & Co.). Warwick Castle; Wesleyan Chapel, Warwick (Ingram, Hope-Jones & Co.); Parish Church, Loughborough; Melbourne Town Hall, Australia (Ingram & Co.). The Tibia Dura has also been used by Mr. Hope-Jones in America.*

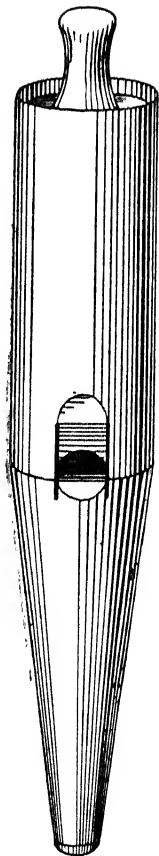
Tibia Major—(Lat.) Major = greater. 16 ft.; 8 ft.

The name is employed in Germany to designate a manual Flute double, usually of stopped pipes. A stop of this description was used by Schulze at Doncaster Parish Church (1852). The name is also used in Germany to denote an open 8 ft. Flute corresponding to our Hohlfalte, but of much fuller and more massive tone. It is frequently employed on the Great organ. The Tibia Major may be described as a Tibia Plena made of less immense scale.

Tibia Minor—(Lat.) Minor = smaller. 8 ft.; 4 ft.

In Germany a large-scaled Gedeckt, the word *minor* merely having reference to pitch. The name is used by Mr. John H. Compton, of Nottingham, to designate a stop of his invention. Whilst German builders frequently use a large-scaled full-toned open Flute (see **TIBIA MAJOR**) on their Great organs, Mr. Compton prefers to employ a *stopped* pipe of the Tibia family, as conducive to better blend. The Tibia Minor bears some

* For the first pair of illustrations the author is indebted to the kindness of Dr. A. B. Plant, of St. Paul's, Burton; for the second pair to that of Mr. Eustace Ingram, jun., of Hereford.



Metal Tibia Minor (Compton), showing narrow mouth and leathered lip.

resemblance to Mr. Hope-Jones' Tibia Clausa, but being destined more for use on an open soundboard differs in some important respects. The stop is now generally made of wood, though several specimens have been made of metal. In all cases the upper lip is leathered. The tone of the Tibia Minor is extraordinarily effective. In the bass it is round and velvety with a suspicion of smooth French Horn quality. In the treble the tone becomes very clear and full. The top notes of the stop, indeed, bear in them some resemblance to the full liquid notes of the Ocarina, though free, of course, from the undesirable features of that instrument. Whilst entirely devoid of the objectionable hooting quality sometimes displayed by powerful Flutes, it forms a solo stop of remarkably fine effect, and in combination serves to add much clearness and fulness of tone to the treble, and, in general, exercises to the fullest extent the beneficial characteristics of the Tibia class of stop already detailed (see **TIBIA**). If only by reason of the faculty so advantageously exercised, of thus mollifying and enriching the upper notes of other stops—too often prone to become hard, strident and thin in tone—the Tibia Minor deserves recognition as one of the most valuable of modern tonal inventions. All Souls', Radford, Nottingham; Emmanuel Church, Nottingham; U.M.F. Church, Stapleford, Nottingham; Baptist Church, Stapleford, Nottingham; Hucknall Torkard, Nottingham; Emmanuel Church, Leicester. An average scale for a CC wood pipe may be taken as, CC, 6 in. \times 5 in., the mouth being cut up $1\frac{3}{4}$ in. A CC metal pipe measures as much as 6 in. diameter. The mouth is narrow.

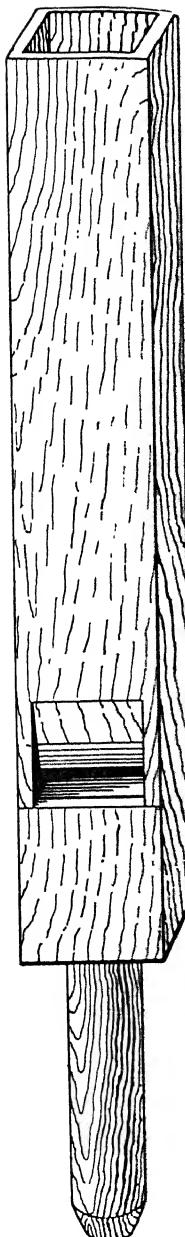
TIBIA MOLLIS—(Lat.) *Mollis* = soft. 8 ft.; 4 ft.

The stop invented and so named by Mr. Hope-Jones is a Flute of soft tone. It is composed of open rectangular wood pipes. The mouth, which is very long, is vertically placed—*i.e.*, instead of running across the pipe in the usual direction, is parallel with the sides of the pipe. The wind is carried up one corner of the pipe for a considerable distance, and blown in a thin sheet across the body of the pipe into the mouth. The lip is inverted. The sole example is at St. George, Westcombe Park, Blackheath. The name Tibia Mollis is also employed by Mr John H. Compton, of Nottingham, to denote a variety of his Tibia Minor (*q.v.*). The mouth is less wide, and the tone more subdued than that of the parent stop.

Tibia Plena—(Lat.) *Plenus* = full.

The Tibia Plena is sometimes named Tibia Major, Major Flute (see also STENTORPHON).

The Tibia Plena was invented by Mr. Hope-Jones, and first introduced by him into the organ at St. John, Birkenhead. It is a wood Flute of very large scale, with the mouth on the narrow side of the pipe. The block is sunk, and the lip, which is of considerable thickness, is usually coated with a thin strip of leather to impart to the tone the requisite smoothness and finish. It is voiced on any wind pressure from 4 in. upwards. The Tibia Plena is the most powerful and weighty of all the Tibia tribe of stops. It is, therefore, invaluable in large instruments. When used in organs of less ambitious pretensions, the scale of the stop needs considerable reduction if an exaggerated effect is to be avoided. A curious acoustical phenomenon is sometimes to be observed in connection with this stop, for in the immediate neighbourhood of the pipe a faint undertone, one octave below the normal pitch of the pipe, is often apparent. The cause of this has not yet been expounded. The Tibia Plena is sometimes noticed to have the effect of toning down the harshness of a Diapason when used in combination therewith. The name Tibia Plena has also been used in America. Used by the Hutchings-Votey Organ Co. it has served to denote a large-scaled metal Flute, heavily blown (Yale University). The Tibia Profunda (*q.v.*) and Tibia Profundissima are the 16 ft. and 32 ft. pedal extensions of the Tibia Plena. Worcester Cathedral; Collegiate Church, Warwick; Victoria Rooms, Clifton; St. Mark, Brighton; St. Saviour, Oxton, Birkenhead; St. John, Birkenhead, etc. In U.S.A., Christian Scientist Church, Denver, Colorado (Austin Organ Co. and Hope-Jones); St. Luke, Montclair, N.J.; Park Church, Elmira, N.Y. (Hope-Jones and Harrison). At Worcester Cathedral the stop actually measures:—CCC (pedal), $15\frac{3}{4}$ in. $\times 13\frac{3}{4}$ in.; CC (manual), 9 in. $\times 7\frac{1}{8}$ in.; T. C., $5\frac{1}{16}$ in. $\times 4\frac{5}{8}$ in.; Mid. C, $3\frac{1}{4}$ in. $\times 2\frac{1}{16}$ in.; cut



Tibia Plena (Hope-Jones),
showing leathered lip.

up $\frac{2}{5}$ to $\frac{1}{3}$. A treble C pipe in the author's possession, made by Messrs. Norman & Beard, measures $2\frac{1}{16}$ in. \times $1\frac{1}{16}$ in., the upper lip being cut up $\frac{5}{8}$ in.

{ **Tibia Profunda**—16 ft.

TIBIA PROFUNDISSIMA—32 ft. (Lat.) Profundis = deep. Profundissimus = very deep. See **TIBIA PLENA**.

There is a very powerful example of the former at St. Mary's Collegiate Church, Warwick (Hope-Jones).

Tibia Rurestris—(Lat.) Rus = country. See **BAUERFLÖTE**.

Tibia Silvestris—(Lat.)—Silvester = appertaining to a wood. See **WALDFLÖTE**.

Tibia Vulgaris—(Lat.) Vulgaris = Common. Common pipe. A name for **BLOCKFLÖTE**.

Tierce—(Ger.) Terz. (Lat.) Tertius = third. Manual $1\frac{3}{8}$ ft.; pedal $3\frac{1}{8}$ ft. It also occurs in old organs as $6\frac{2}{5}$ ft., and rarely as $12\frac{4}{5}$ ft.

A mutation stop drawing separately or in conjunction with other Mixture ranks. The Tierce is normally pitched at a seventeenth above the unison. Its use is discussed under **MIXTURE**.

TIERCINA—8 ft. tone. Hope-Jones stop.

A novel stop, bearing this title, was inserted in the Choir organ of the fine instrument erected in Worcester Cathedral (Hope-Jones, 1897). The Tiercina is constructed of stopped tin pipes of very small scale and bearded. The stoppers are solid, the windway, and bore, small. The main structural peculiarity of the Tiercina is a sort of shade projecting over the top of the mouth. The Tiercina yields a reedy ground tone, a trace of the first upper partial (twelfth), and the second upper partial (tierce), sounded in equal proportion to the ground tone. The general effect of this stop is most peculiar, and in combination the Tiercina is instrumental in the production of many curious *timbres*. The pipes are, unfortunately, of very delicate constitution, and readily thrown off their speech. The specimen referred to was voiced by Mr. J. W. Whiteley. The Tiercina also occurs in the monster organ exhibited at St. Louis Exposition, 1904 (Art Organ Co.).

Tolosana—The name occurred in the specification of the former organ at Seville Cathedral, as given in Hamilton's "Catechism of the Organ" and in Hopkins' and Rimbault's treatise. It appears to have been an ordinary stop named after the town of Toulouse.

Tonitru—(Lat.) = a rumbling sound, thunder. A name applied by Mr. Hope-Jones to a 64 ft. Resultant Bass.

Tonus Fabri—(Lat.) Tonus = tone, Faber = a metal-worker or blacksmith. See **GLÖCKLEIN**, and **CAMPANA**.

TRANSPOSITION STOP—Transposition Switch.

A stop or switch controlling a mechanical device for transposing the pitch. This is accomplished by the medium of a false keyboard or a back-fall arrangement, or in the case of electrical instruments it can be effected by means of the contacts. A transposing device is a valuable adjunct to small instruments intended for village or mission churches, unlikely to be able to command skilled performers. It is a useful feature of Mr. Casson's Positive Organ, and some other similar instruments. The transposing keyboard is no novelty. It is mentioned by Arnold Schlick in his book, published as early as 1511. One was also introduced in 1730, by Michael Engler, into his organ at St. Nicholas, Brieg.

TRAVERSO—**TRAVERSBASS**—See **FLAUTO TRAVERSO**.

Tremulant—(Lat.) Tremulus = shaking. *cf.* (Eng.) tremulous.

Invented on the Continent about the middle of the XVIth century. An appliance introduced into the organ for the purpose of disturbing the wind supply to certain stops, and of thereby inducing an undulation in their tone. According to its disposition relative to the wind-distributing portions of the organ, the Tremulant may so be arranged as to act on the entire instrument, on some individual departmental division or group of stops, or even on a single register. The earliest known reference to the use of the Tremulant in this country occurs in connection with Dallam's organ at King's College, Cambridge (1606), in which it figured as "ye shaking stoppe." Father Smith (St. Mary-at-Hill, Billingsgate, 1693), and Snetzler likewise used "Trimoloes." The primitive Tremulant, which consisted merely of a valve situated in the trunk and caused to flutter by the wind encountering the resistance of a spring, must have been a very noisy and imperfect contrivance. Indeed Schlimbach* delivers himself of the following remarks: "Such an undulatory stop [the Bifara] must be most welcome to the organ player, since a right-minded organist can scarcely use the Tremulant, so gimcrack is it usually (indem sie gewöhnlich so beschaffen sind), as to be insufferable or even ludicrous." The first improvements of any consequence appear to have originated with the Parisian builders. Subsequently Messrs. Hill and other London builders carried on the task

* p. 163.

of amelioration. The late Mr. Henry Willis in 1853 patented a form of Tremulant, the speed of which was capable of modification according to the degree of depression of a pedal. Mr. Casson in 1889 introduced another variety, yclept "Vibrato," a silent Tremulant of delicate beat, varying its speed according to the position of the Swell louvres (Omagh, Ireland). The artistic value of this device cannot be overrated. The dead beat of a Tremulant running at one speed tends to ruin the effect of a slow and impressive *smorzando*—especially on a dull-toned stop, such as a Gedeckt or Harmonic Flute. The Austin Organ Co., of Hartford, U.S.A., employ a "Fan Tremolo," somewhat similar to that employed in American suction organs. It consists of a double-bladed fan suspended over the pipes, and is driven by four motors coupled in pairs and actuated by the pipe wind. The effect of this Fan Tremulant is musical and pleasing, the sound waves being acted upon *after* generation. The beat is less pronounced in the bass, and does not partake of the heavy sledge-hammer thump which so rapidly becomes wearisome to the ear (See *BOCKSCHWEBUNG*). There is an example at the Baptist Church, Rushden, Northampton. Mr. Willis sometimes secured very satisfactory results merely by the employment of a large free-reed inserted in the wind-chest. Most modern Tremulants are so constructed that their speed is adjustable from within the organ. The Vox Humana requires a Tremulant of rapid beat—a Vibrato, in fact—but in the case of most other stops, whether flue or reed, one of less rapid pulsation is ordinarily conducive to superior results. Of course, those good folks obsessed by the *idle fixe* of rigidly austere and orthodox "legitimate" organ music, those who will brook no such sacrilege as an "orchestral transcription," regarding the organ as a mere mechanical machine for the grinding out of stoichiometrically accurate counterpoint, find themselves unable to tolerate the imbecile mock-pathos of the Tremulant. At the risk of incurring the ridicule of these puristic Hobbies, let it here be suggested that a well equipped organ might profitably include two varieties of Tremulant, one of the *vibrato* or fan type, and one of powerful, slow pulsation. (See remarks under *VIOLE D'ORCHESTRE*). That stops under the influence of the Tremulant should never systematically be combined with those not so affected is an injunction, the wisdom of which is self-evident.

Tremulants frequently have the undesirable defect of unduly disturbing the pitch of the stops they affect. On arresting the action of the Tremulant, it will be found that the pitch of such a stop as the Vox Humana (the pipes of which exercise but little control over the tongues), for instance, will sometimes have been deflected to the extent of nearly a quarter of a tone. This fault may probably be attributed to the very powerful springs often attached to Tremulants. Difficulty is sometimes experienced in inducing Tremulants to act, when the organ reservoirs are of the single-rib

spring type,* a difficulty which can only be surmounted by employing a very large and powerful type of Tremulant or the Fan Tremolo.

Triangular Flute—See HOHFLÖTE.

Trichter-Regal—See REGAL.

Trigesima-prima—(Lat.) = thirty-first.

Trigesima-sexta—(Lat.) = thirty-sixth.

Trigesima-tertia—(Lat.) = thirty-third. Found in old Italian organs.

Trinona—8 ft. ; 4 ft. A sweet and soft-toned Gamba.

A specimen made of wood occurs at St. Vincent, Breslau.

Triplette—A III rank Mixture.

The name was formerly used by Messrs. Bevington in the same manner as Doublette has been employed by French builders. An example existed in the Apollonicon at the erstwhile Royal Colosseum, London.

Tromba—For derivation see TUBA. 8 ft. ; also 16 ft.

A powerful Trumpet of smooth, full tone, in contradistinction to the Posaune, which is a powerful Trumpet of rather "free" tone. The Tromba is akin to the Tuba Minor. There is an excellent example at All Saints' Church, Notting Hill, W. (Norman & Beard). Included in his MS. collection of scales, the author finds the following particulars of a **Pedal Tromba** (flue), 16 ft., made by Schulze. Wood pipes of inverted conical shape:—CCC pipe, 16 ft. long, and 5 in. \times 5 in. ; top of pipe, 7 $\frac{1}{2}$ in. \times 7 $\frac{1}{2}$ in. Made of $\frac{3}{4}$ in. "stuff" planed to $\frac{1}{2}$ in. at top. Pipes slotted, and fitted with roller, and bevelled cap ; mouth cut up $\frac{1}{3}$.

Tromba Bastarda—A "crashing" Trumpet of the Posaune type. Bastarda is a piece of ordnance. See below.

Tromba Batalla—A ringing, clear-toned Trumpet. Battle Trumpet. See below.

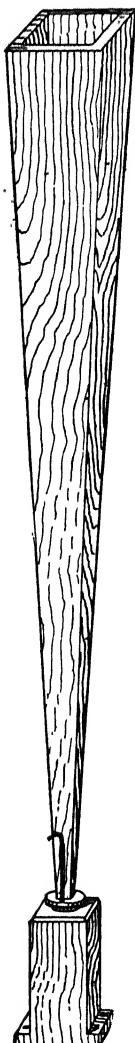
Tromba Campana—A Waldhorn (*q.v.*) of reed pipes. See below.

Tromba Real—*i.e.*, Tromba Regal = Royal Trumpet (of grand tone), or a Trumpet akin to the ancient Regal.

Examples of Trumpet stops bearing these titles occurred in the former organs at Seville Cathedral. There was probably little distinction between the tone of these registers. It is said that the reeds found in most Spanish organs are of excruciatingly blatant tone.

* This type of reservoir is much to be preferred to the customary weighted variety. The springs respond instantaneously to the slight demand for wind, whereas a weighted reservoir disturbs the wind supply by reason of the inertia of the weights. Provided that a ventil preventing the upper board of the reservoir from too large a travel is inserted, it will be found that the inward fold of the rib will compensate for the increased tension of the springs.

Trombone — For derivation, see TUBA. 16 ft. Contra Trombone, 32 ft. (Ger.) Posaune = Trombone.



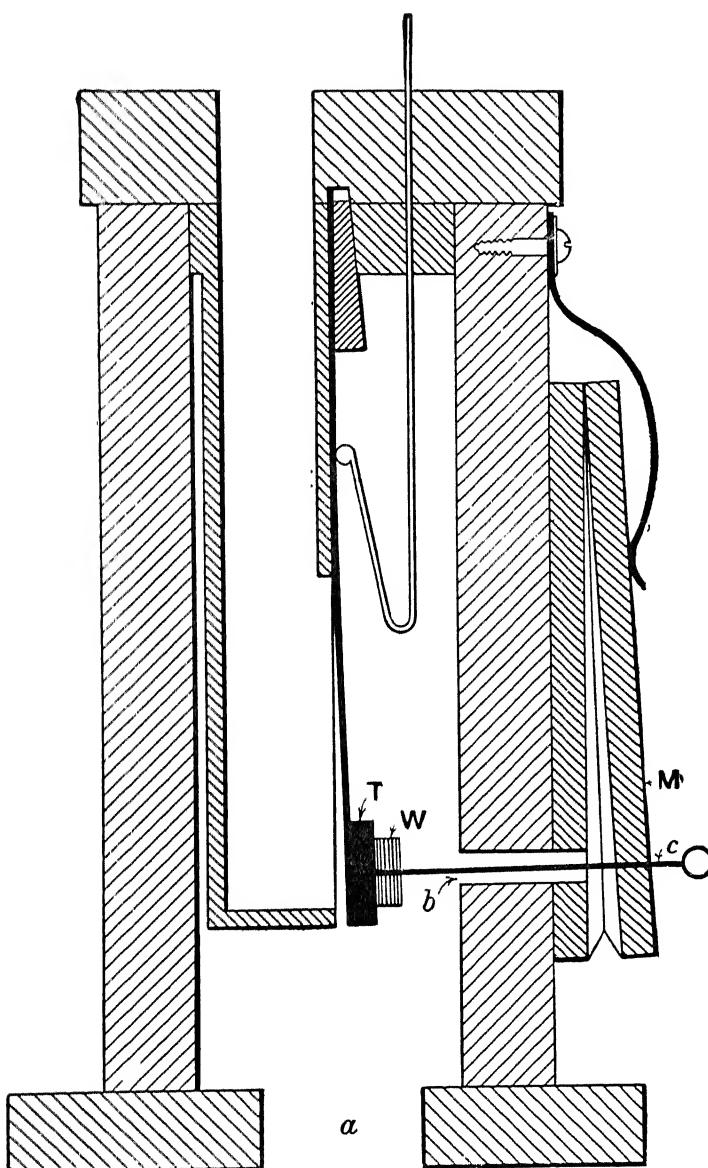
Trombone.
(wood).

The two names are here distinguished, since in this country Posaune is ordinarily restricted to the manual. Posaune 16 ft. and Contra-Posaune 32 ft. occur, however, at Westminster Abbey (Hill), and Contra-Posaune 32 ft. at the Albert Hall, London (Willis, 1871). In these instances it would appear that the name Posaune is employed to denote a stop of more intense character than the usual Trombone. The Trombone is a reed stop, variously represented in this country. On the manual it may be held equivalent to Double Trumpet. The word Trombone is usually employed to designate any pedal reed, of 16 ft. pitch, more powerful than a Contra Fagotto, the name Bombarde having now fallen into comparative desuetude. The pipes of the Trombone are made of either metal (usually of zinc) or wood. They are of inverted conical shape. In the successful voicing of all powerful pedal reeds heavy wind pressure is, of course, a *sine quâ non*. The lowest pipes of 32 ft. reeds are generally provided with some pneumatic device for facilitating their prompt speech. This takes the form of a motor or motors connected with the tongue, and so arranged as to become inflated on the depression of the pedal key. The rapid inflation of these motors serves to destroy the inertia of the tongue. Messrs. Hill were amongst the first, if not the first, to adopt the use of the pneumatic starting device. This firm has employed two motors, one to start and the other to check, the tongue. The same arrangement has recently been utilized by Messrs. Walker at York Minster (1903). The more usual plan, adopted by Willis, is to employ one motor holding the tongue, when out of use against the face of the reed (see Figure). This pattern was used by Messrs. Hill at Birmingham Town Hall (1835). At Sydney Town Hall (Hill, 1889) exists the only real 64 ft. stop in the world. It is a beating reed. According to Mr. Elliston ("Organs and Tuning") it is said to resemble in effect a Kettledrum. See also TROMBA.

Trommel—(Ger.) Trommel = drum.

The word is of onomatopoeic origin, the sound representing the rolling of the drum. See DRUM PEDAL.

Trompete—(Ger.) = Trumpet.



Section of Pneumatic Starter for 32 ft. Reed.

Wind enters the boot at *a*, and, passing through the channel *b*, inflates the motor *M*. *M* carries with it the wire *c* bearing the wad *W*, and thereby releases the tongue *T*, which is at once set into motion by its elasticity.

Trompeterengel—(Ger.) Trompeter = trumpeter; Engel = angel.

An angel, situated in the case, blowing an imitation Trumpet. In some cases facilities were provided for the movement of this Trumpet to and from the mouth. Garrison Church, Berlin; Garrison Church, Potsdam (Joachim Wagner).

TROMPETTE—(Fr.) = Trumpet.

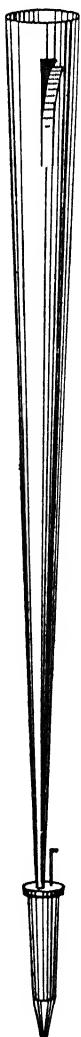
TROMPETTE-À-CHAMADE—See FAN TRUMPET.

Trompette Harmonique—See TUBA.

Trumpet—(Fr.) Trompette; (Ger.) Trompete. For derivation, see TUBA. 8 ft. Double Trumpet, 16 ft.

A powerful chorus-reed usually found on the Great organ, though occasionally on the Swell, and very rarely on the Choir. The pipes are of metal, and of inverted conical shape. The tongues generally exhibit a considerable degree of curvature. Mr. Hermann Smith, in "Modern Organ Tuning," asserts that "the Trumpet in the organ has harmonics, which from their clang we may judge to extend beyond the twentieth." It is due to the fact that reed stops are singularly wealthy in these higher dissonant overtones that they so frequently fail in their blending attributes. The ordinary "free"-toned Trumpet, when of due power, furnishes a conspicuous exemplification of the validity of this contention. A soft, smooth-toned Tuba is vastly more efficient and serviceable than the customary Great organ Trumpet. Unlike the latter, it is available as an effective solo stop; in combination also, being less raucous in tone, it is distinguished by superior blending properties. Whereas for ordinary reed effects modern Swell reeds should amply suffice, the Great organ Tuba Minor or Tromba may be used in a manner analogous to the orchestral "brass." It is inadvisable, on the other hand, to voice Swell reeds too "thick" in tone, as the fact of their enclosure has to be taken into account. Nevertheless *smoothness* of tone is not necessarily concurrent with this "thick" or "close" quality.

It is important fully to grasp the fact that modern tonal design has in no small measure been modified by the development of the Swell organ as a potential factor of the tonal scheme, demanding recognition. We have already witnessed (see DIAPASON, Section 8) how that the sudden metamorphosis of this department from a mere Echo organ into a highly important constituent feature of the organ, accomplished by



Trumpet.

the improved reed work of Willis, rendered necessary a corresponding expansion of the tonal functions of the flue-work of the said department. At the time when it became the custom to introduce the Trumpet as the Great organ primary reed, the reed-work of the Swell had not yet attained to its present dignity or pitch of perfection. And, further, as has been pointed out (see *sub* MIXTURE), the whole principal of tonal design was then conducted on a radically dissimilar basis. Power was secured by the so-called extension of the foundation of the organ by Fifteenth, Mixtures, and so forth. Now that mere mechanical limitations no longer offer impediment to the development of tonal design along natural channels, we aim at cohesion and homogeneity of tone, striving that the many may become one instead of the one diverging into the many. It is with a view to the realization of this ideal that the modern school has introduced the Tibia (*q.v.*) class of tone, urges so insistently the necessity of smoothness of tone in chorus reed-work, and even goes to the length of building up the greater portion of the necessary brilliancy of the organ direct from the foundation work itself, instead of by the external application of a disproportionate amount of heterogeneous Mixture-work.

On a well-equipped Choir organ, such as is found in French instruments, in the capacity of a soft chorus reed, a quiet Trumpet would be a decided acquisition. Between the bass and treble of the old-fashioned Trumpet a distressing *hiatus* is generally apparent. To secure purity of tone, and, at the same time, to remedy this lack of balance, the treble should invariably be of harmonic structure, the stop being planted on a fair wind pressure. Needless to say, the orchestral Trumpet is more closely represented by a soft, smooth Tuba, than by the organ Trumpet. The Double Trumpet is usually either identical with, or slightly more powerful than, the Contra Fagotto. For Harmonic Trumpet, see TUBA.

Tuba—Tuba Mirabilis 8 ft.; also 16 ft.; 4 ft. (Lat.) Tuba = Trumpet. (Russ.) Truba; (Bohem.) Truba, Trauba are related to (Lat.) Tuba, as (It.) tronare to (Lat.) tonare. (Lithuanian) Truba = a herdsman's horn; (Portuguese) Trupetar = to make a noise. The introduction of the *r* accounts for such radically identical names as Trumpet, Trombone, Tromba.

The Tuba is a reed stop of extremely powerful tone; it is, in fact, *the most powerful stop on the organ*. It is voiced on heavy wind pressure, the exact intensity of which is dependent on the size of the edifice and style of voicing affected. The lowest pressure on which a Tuba Mirabilis (*i.e.* as distinct from the Tromba or Tuba Minor, is planted, is about 7 ins. or 8 ins. The first Tuba, *yclept* Ophicleide, was introduced by Messrs. Hill at Birmingham Town Hall (1835) on a wind pressure of about 11 ins. or 12 ins. Considerably higher pressure—15 ins. or 20 ins.—is now frequently

utilized. The late Mr. Willis in his fine instruments at the Alexandra Palace, London; St. George's Hall, Liverpool; Lincoln Cathedral; used, approximately, 20 ins. His Tubas at the Albert Hall, London, speak on about 22 ins. In the organ at St. Paul's Cathedral, as finally rebuilt by him in 1901, the treble of the Tuba in the Dome speaks on a pressure of no less than 25 ins. In considering the question of wind pressures it is absolutely essential, in the first place, summarily to banish the false idea that heavy wind pressure is ordinarily employed for the purpose of extracting the greatest possible amount of noise from the stops planted on it, or, indeed, that it is necessarily productive of great power. In a previous work of the author's, entitled "Tonal Design in Modern Organ Building," it was pointed out that the main object in the use of heavy wind pressure is the production of refined tone. This matter, indeed, is so important a one, so far as modern organ building is concerned, that the passage (relating alike to flue and reed work) may, profitably perhaps, be here reproduced.

"The truth of this view of the wind pressure question is demonstrated by the fact that Hope-Jones, for instance, has placed in chamber organs, and small churches, reeds on 10 in. wind without any disagreeable effect resulting. His Swell organs are normally voiced on 10 in. wind throughout; and, by the production of what are acknowledged to be some of the finest Swells in the country, he has demonstrated that heavy wind can successfully be used alike for reeds and flues. The softest stop in the new York Minster organ (Walker), the Echo Dulciana—a mere whisper, inaudible at the keys unless absolute quiet is reigning, and a stop of exquisite quality—actually speaks on a pressure of about 8 ins. This pressure was required for the orchestral reeds and Harmonic Flutes on the Solo organ, and, therefore, was employed also for the Dulciana. It is a fact that the most competent modern voicers find, that, on a wind pressure of moderate strength, it is possible to obtain greater refinement of tone and promptitude of speech, than on a low pressure. Heavy wind pressure is employed, therefore, to secure refinement, not noise. In producing high notes of the utmost delicacy, vocalists and performers on wind instruments constantly employ an exceedingly high wind pressure."*

M. Vaucanson, who, in 1741, exhibited a most ingenious Flageolet playing automaton, calculated that the muscles of the chest of a human player had to make an effort equivalent to fifty-six pounds, in order to produce the highest notes; whereas, a single ounce sufficed for the lower notes. †

* p. 23.

† It is in accordance with experience such as this, that Cavaillé-Coll first divided his reed, and harmonic-flue soundboards, employing increased wind pressure for the treble of such stops.

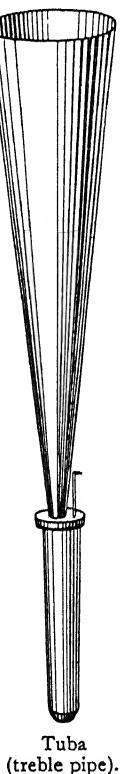
"One of the greatest advances in the tonal aspect of modern organ building has been due to the more scientific adaptation of wind pressures. We no longer find up-to-date builders voicing entire organs on $2\frac{1}{2}$ in. wind; and even the conventional, though absolutely absurd, use of pressures of such slight variation as Great $3\frac{1}{2}$ in., Swell 3 in., Choir $2\frac{1}{2}$ in., is regarded with less complacency than was hitherto the case. Indeed, at the present time the truth is gradually gaining ground that such a small differentiation of pressure is scarcely worth effecting. As I have already remarked, the swell box acts as a kind of wet blanket on the tone, and undeniably ruins all delicate, low pressure voicing. The only way to remedy this—and also the disadvantages of an organ situated in an organ chamber or "coffin"—is to employ heavier pressure. With the exception of the reed work, the average Swell organ is little better than the old Echo organ from which it was originally developed. It has conclusively been shown, in the case of reed work by Willis, Hope-Jones and others, that a thick tongue is alone productive of the finest quality of tone. In order to set a thick tongue into vibration, heavy wind pressure is necessary. Heavy wind pressure, therefore, whilst also used for promoting power in the treble, is mainly employed for the purpose of securing *quality* rather than *quantity*. Reed stops should be full and smooth throughout, and (like the human voice and orchestral brass) should if possible be soft in the bass, and should gradually tend to increase in power as the pitch rises."* Yet other testimony, which may be quoted in support of this contention, is furnished by a comparison of the Trompette Harmonique as voiced by Cavaillé-Coll on 7 in. or 8 in. wind only (St. Sulpice, Paris) with a real Tuba. It will be found that in some instances the former stop is quite equal in power to a 15 in. Tuba voiced on Willis lines. The Cavaillé-Coll Trompette Harmonique is merely a Trumpet of "free" tone, "blown for all it is worth" (to adopt a colloquialism). Regular in tone it may be, but yet it is entirely devoid of "body," witness, for instance, the specimens at the Albert Hall, Sheffield, and Town Hall, Manchester. The Tuba, on the other hand, is characterized by great fulness and purity of tone, for the production of which the surplus pressure is needful. It cannot, indeed, be too strongly urged that unless this "thick" quality is in evidence, the stop is not a true Tuba, but merely a magnified Trumpet.

For reasons which will be apparent to all, it is essential to the success of a Tuba that it be of harmonic structure. Unless so constituted, the treble will either be lacking in quality or eclipsed in power by the bass, or in a reciprocally modified degree both faults will be in evidence. At St. Paul's Cathedral (Dome Tuba); Norwich Cathedral (15 in. wind, Norman & Beard), and Einsiedeln Monastery, Switzerland (Swell Horn on

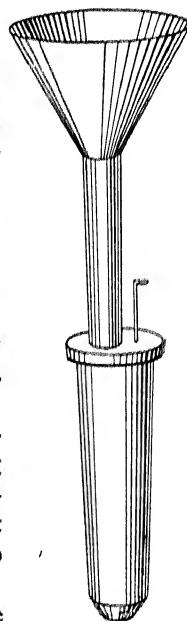
* *Ibid.* p. 22.

12 in. wind, Weigle) are to be found stops, the treble pipes of which are of triple length. The Tuba is sometimes enclosed in a swell box. In a non-resonant building there is no doubt but that the practice is conducive to greater efficiency. There are good instances of enclosed Tubas at St. Alban, Holborn (Willis); Burton Parish Church (Norman & Beard). The pipes of the Tuba are of inverted conical shape, those in the top octave being occasionally surmounted by a bell. The pipes are now often made of the thick, "special," unplated metal referred to under Diapason.

In Germany the name Tuba is given to a powerful Trumpet as well as to stops voiced after the Willis pattern (as by Stahlhuth, Weigle and a few others). It is now generally admitted that Tubas should dominate the organ, after the analogy of the orchestral "brass." Those acquainted with the imposing effect of the large Willis Tuba, with Double Tuba and Tuba Clarion (harmonic, of course) used in full organ, will notice the brilliancy imparted by the Tuba Clarion, the perfect finish and balance it adds to the *ensemble*. When both cannot be afforded, the Double Tuba is, of course, preferable to the Tuba Clarion. See DOUBLE-TONGUED REED, TUBA MINOR, TUBA SONORA, and illustrations under REED. *Scale*.—The following are the measurements of the Tuba Mirabilis at Norwich Cathedral (Norman & Beard):—CC, 7 in.; T. C., $6\frac{1}{2}$ in.; Top C., $4\frac{1}{2}$ in. From tenor C to F sharp (31 notes above) the pipes are of double length. From G to top C the tubes are of triple length—in organ-building phraseology "an octave and a fifth longer" than the note they give.



Tuba
(top octave).



Tuba Clarion—4 ft. An octave Tuba (*q.v.*).

TUBA MAGNA—(Lat.) Magnus = great. See TUBA MAJOR.

TUBA MAJOR—Tuba Magna. (Lat.) Major = greater. Either (1) a Double Tuba, or (2) an 8 ft. Tuba of full scale and power, a Tuba Mirabilis.

In the latter sense the name Tuba Magna is applied to a reed at St. Saviour's Collegiate Church, Southwark (Lewis).

Tuba Minor—8 ft.

A small Tuba of smooth full tone. A skilful voicer can obtain the type of tone on a wind pressure of only 4 in. or 5 in., though of course a higher pressure is vastly preferable. The stop is, therefore, well adapted for use as a Great organ reed (see TRUMPET). The Tuba Minor differs from the Tromba in partaking more of the quality of the Hope-Jones Tuba Sonora. Baptist Church, Stapleford, Nottingham; Watnall Road Church, Hucknall Torkard (electric); Emmanuel Church, New Park Street, Leicester (electric) Compton.

Tuba Mirabilis—(Lat.) *Mirabilis* = wonderful.

A former name for what is often now termed simply Tuba.

Tuba Profunda.

TUBA PROFUNDISSIMA—(Lat.) *Profundus* = deep, *Profundissimus* = very deep.

The 16 ft. and 32 ft. varieties, respectively, of the Tuba Sonora.

Tuba Shofar.

The Jewish "Shofar" was a ram's horn Trumpet, without a mouthpiece. Some readers of this work will perhaps be familiar with the employment of the Shofar in Sir Edward Elgar's wonderful oratorio, "The Apostles." The Shofar call is characterized by the interval of an ascending sixth. There is a stop named Tuba Shofar at the Temple, Washington, U.S.A. (Kimball Co.). It is a heavy pressure, non-harmonic Tuba, rough and strident in tone, especially so in the treble. The bodies are variously "trimmed short."

Tuba Sonora—(Lat.) *Sonorus* = loud-sounding, sonorous.
8 ft.

Invented by Mr. Hope-Jones. A Tuba of very full, round and pure tone, constructed with tongues of unusual thickness. The tone even appears hollow, suggestive of the orchestral Horn. The ideal Great organ reed for a large instrument. There are magnificent specimens at Worcester Cathedral (20 in. wind, enclosed in the Solo box), and the Collegiate Church, Warwick (10 in.). This class of tone marks an entirely new departure in the science of reed-voicing.

Tubalflöte—A corruption of Jubalflöte.**Tubasson**—16 ft.; 32 ft.

A stop found in some French organs, equivalent to Trombone. It has closed shallots. Continental builders sometimes classify open and closed shallots as "trompette" and "basson" respectively. The name has been used in this country by Anneessens, of Belgium.

Tussin—16 ft. A reed at Königsberg Cathedral (1721).

Twelfth— $2\frac{2}{3}$ ft.

A mutation stop, pitched at the interval of a twelfth above the unison. Its function, by corroborating this important natural harmonic, is to bind the Fifteenth to the Principal. It is usually made of Diapason pipes. For the ordinary accompanimental usage of a church organ, a Flute 4 ft. is certainly of greater utility than the Twelfth; in the rebuilding of old organs on economical lines the latter stop is, therefore, frequently removed to make place for the insertion of the former. Both, of course, would normally be included in a new instrument. The Diapason Twelfth is customarily scaled one pipe less than the corresponding pipe of the Octave or Principal. Abroad the Twelfth is often constructed of Gemshorn pipes. See HARMONIC STOPPED TWELFTH, RAUSCHQUINT, QUINT.

Tympani—(Lat.) = drums.

Drums were frequently introduced into mediæval organs, and are not unknown in modern concert instruments.

U.

Unda Maris—(Lat.) Unda = wave; Mare = sea. 8 ft.

A stop tuned slightly flat or sharp, and thereby caused to undulate like the Voix Céleste. The name was originally restricted to undulating stops of Flute tone, and the stop was either a Gedeckt or an open Flute of wood or metal. Now in England, and sometimes in Germany, Unda Maris is synonymous with Céleste, e.g., in organs by Messrs. Brindley & Foster. As made by some French builders (e.g., M. Puget, of Toulouse), the Unda Maris is produced by two pipes of slightly pronounced Quintatön character, pulsating together with pleasing effect. See CELESTINA. Messrs. Norman & Beard have obtained most charming effects from small-scaled Zauberflutes, arranged under the name of Unda Maris II ranks, to beat together, one being tuned flat, the other sharp. There are instances at Norwich Cathedral, Christ Church, Lancaster Gate, W. (Norman & Beard). See also BIFARA.

UNTER—(Ger.) = under. A prefix equivalent to *Sub*.

UNTERSATZ—Unterbass. (Ger.) Setzen = to set, put or place. See SUB-BOURDON.

V.

Varitone—(Sp.) = Baryton.

VENTIL

A valve controlling the passage of wind to any particular department or group of stops. Having cut off the wind supply to certain stops by means of such a contrivance, it is evidently at the option of the performer to prepare any particular combination of such stops as he may desire, bringing them into operation by means of the ventil at the desired moment. This ventil control is normally employed in France. One of the main objections to the system rests in the fact that it imposes a constant tax on the player's memory—already sufficiently overburdened. It likewise involves a considerable amount of hand registration. The English system, dispensing with ventilis, secures rapid and indicatory stop manipulation by means of pistons. On the Continent, and sometimes in America, the combination pistons serve to throw the ordinary stop action out of gear, indicating this by remaining in when once pressed. The movement of a special negative or release piston (see AUSLÖSER) once again restores the action of the stop knobs or keys. This system, however, is rapidly being discarded in America in favour of the English method of so arranging the pistons as to throw out the stop knobs. Mr. Hope-Jones' "Stop-switch," and Messrs. Hill & Sons' "Ventil-switch" are really ventilis in the sense that they cut off the electric current from the stop action, thus enabling a combination of stops to be prepared beforehand and switched on at desire. Mr. Casson's Manual Help is also a variety of ventil switch, admitting of two or more departments of the organ being controlled by one manual.

VIBRATO—See TREMULANT.

Viejos—A Spanish stop. Viejos = the eyebrows.

The stop is said to derive its name from the shape of the cover or plug at the top of the pipe. (Hamilton's "Catechism of the Organ"). Former organ at Seville Cathedral.

VIENNA FLUTE—Wienerflöte. Wien = Vienna. 8 ft.; 4 ft.

Locher remarks that the name Wienerflöte lacks all historical and etymological foundation. See FLAUTO TRAVERSO.

Vigessima-quarta—(Lat.) = Twenty-fourth.

Vigessima-nona—(Lat.) = Twenty-ninth.

Vigessima-secunda—(Lat.) = Twenty-second.

Vigessima-sexta—(Lat.) = Twenty-sixth. Found in ancient Italian organs.

Viol—(Fr. and Ger.) Viole; (Low Lat.) Vitula, Vidula; (Provençal) Viula; (It.) Viola; from the same source as (Old High German) Fidula; (Ger.) Fiedel; (Dutch) Vedele = (Eng.) Fiddle. Vitula is by some derived from (Lat.) Vitulari = to leap like a calf, whence, *per synecdoch.*, to be merry. *cf.* the expression “the merry fiddler.”

A generic name for Gambas of very small scale and keen tone. See GAMBA, VIOLE D' ORCHESTRE, VIOLE SOURDINE.

Viola—For description see VIOLA DA GAMBA. For Viola and Contra Viola, see GAMBA.

Viola da Gamba—For derivation of Viola, see VIOL. 8 ft. (Low Lat. and It.) Gamba = a leg, *cf.* gambado, a case of leather formerly employed to guard the leg of those on horseback.

The correct name for Gamba. The latter word merely means a leg, Viola da Gamba being the fiddle held between the legs. Our system of stop terminology is so inextricable a conglomeration that, for the present, we are compelled to sanction even so great an anomaly as String Gamba = string leg! See GAMBA.

Viole Céleste—See VOIX CÉLESTE.

VIOLE D' AMOUR—(Lat.) Amor = love. 8 ft.; 4 ft.

Practically identical with Echo Gamba, but sometimes a slightly sharp-toned Dulciana.

Viole d'Orchestre—Viola d'Orchestra. For derivation see VIOL; for Contra Viola 16 ft., see GAMBA; for Octave Viol 4 ft., see GAMBETTE.

The Viole d'Orchestre is a Gamba of very small scale. Thus, whereas the CC pipe of a String Gamba might measure $3\frac{1}{4}$ in. in diameter, the Viole d'Orchestre has been made so small even as CC $1\frac{1}{16}$ in. The Viole d'Orchestre was invented by Messrs. Michell & Thynne, first being incorporated in their fine instrument for the Inventions Exhibition of 1885, erected in 1887 in Tewkesbury Abbey. The late Mr. Thynne, a voicer of singular ability, made a speciality of the treatment of small-scaled string stops. His Viols were characterized by rare delicacy and refinement of tone. One peculiarity, worthy of remark, rests in the fact that he sometimes treated them in such a manner as to lead them almost to merge into Flute tone in the upper portion of the compass (see FLAUT HEMIOL). The pipes of the Viole d'Orchestre are usually constructed of tin or spotted metal. They are of cylindrical form, usually slotted, and tuned by means of “tinned tuning slides.” The fragility of pipes of such small scale and nice adjustment renders expedient special care during tuning operations. The mouths are provided with rollers (see BEARD), the lip is cut sharp, the nicking is fine and the bore small. In voicing, a good

“dodge” is to adjust the pipe to speak the octave fairly clearly, before inserting the roller. The ground tone will then be found to be tolerably well regulated. The process of cutting away the ears of Viols, using them solely as a support for the roller, was devised by Mr. J. W. Whiteley. Voicers who devote much attention to the production of these delicate stringy tones frequently appear in some peculiar manner to contract a tendency towards imparting a suspicion of this quality of tone into all their other flue work, whether Flutes or Diapasons. This perpetual reminiscence of Viol tone constitutes one of the few failings of Mr. Thynne’s flue-voicing; it asserts itself even in the *Zauberflöte*.

Notwithstanding the fact that the Viols of Mr. Thynne were in their day opined to be of abnormally diminutive scale, results of a yet more æthereal and animated character were attained by Mr. Hope-Jones through a still further reduction of scale. The first instance of the newer pattern of stop was incorporated in his organ at Worcester Cathedral (1897), the CC pipe measuring no more than $1\frac{1}{8}$ in. in diameter. The pipes of this stop, which was voiced by Mr. J. W. Whiteley, were encased in wood for the purpose of increasing their stability, a precaution found in subsequent instances to be supererogatory. These delicate string stops became at once the *furore*, and since their introduction into the Hope-Jones organs practically all English organ builders have reduced their Gamba scales. The *Viole d’Orchestre* is almost invariably enclosed in a swell box, not only for the sake of expressive use, but also for the purpose of excluding dust from pipes of such delicate adjustment. An unenclosed specimen, of the narrowest scale, may, however, be heard at the Collegiate Church, Warwick (Hope-Jones).

The *Viole d’Orchestre* displays an orchestral quality of tone, the bass, in particular, yielding a remarkably “biting” ‘cello effect. In voicing the Viol class of stop, the main obstacle to be surmounted is the tendency to loss of power or of keenness of tone in the treble. For the satisfactory solution of this difficulty, due regard being at the same time evinced for the efficiency of the other portions of the compass, a wind pressure of at least 4 in. is advisable. Increased wind pressure is desirable for this class of tone solely for the purpose of securing proportionate *balance* of power. Indeed insubordination of keen string tone to the Flutes and Diapasons, ruins the general tone of the organ. So assertive and cutting is overblown string tone, that even heavy pressure *d’Orchestre* reeds do not suffice to cloke its pernicious effect. But, granted



Viole d’Orchestre

due moderation of power and proper treatment, the Viole d'Orchestre combines well with other soft stops, and to the *ensemble* of the particular manual on which it may happen to be located, contributes brightness without undesirable prominence. Exception is sometimes taken to modern string tone, and to the Viole d'Orchestre in particular, on the score that it lacks the faculty of "blending" with other stops. And even should its bare introduction into the organ grudgingly be tolerated, the strange assertion is sometimes ventured, that the stop is idoneous solely to a rigidly isolated and separate usage apart from other stops. In the face of the widespread introduction of such tones and the encomiums bestowed on them by the most prominent of modern organists, such an attitude may assuredly be ignored as merely pedantic and ultra-puristic. In truth, the word *blend* is constantly handled in a very loose manner. On the ordinary old-fashioned type of organ, perhaps one of the most pleasing combinations is that of Gamba and Stopped Diapason. Similarly on the modern organ, the Viole d'Orchestre 8 ft. with the Lieblich Gedeckt 8 ft., is productive of an effect of considerable beauty. The remarkably satisfactory nature of such combinations depends solely and entirely on the fact that there is no sort or shadow of blend. The combined stops stand out in marked contrast, each offering to the other a background, the more perfect on account of its utter dissimilarity. In such instances, of course, the stops *combine* effectively. The association of an old-fashioned Diapason with a Gamba of similar description, is generally attended by results of a painfully incongruous nature, wherein is distinguishable neither blend nor agreeable combination. On the other hand a Diapason and a Principal should display such a homogenous cohesion of tone as may accurately be characterized as good blend. Mr. Thos. Elliston, a distinguished organ *connoisseur*, aptly remarks in his excellent handbook: "Stop combinations are in reality problems in acoustics."

Yet another impeachment sometimes lodged against modern string tone is that it rapidly becomes wearisome. The same objection may be urged at will against all other stops of "positive" tone, particularly reeds. Dissentients so constantly fail to recognize that their opprobrium applies merely to the *abuse* of certain specific effects. *Usum non tollit abusus.* In fine, orchestral effects, Célestes, Tremulants, Vox Humanas, *et hoc genus omne*, are characteristic effects, and, as Profs. Locher of Berne, and Zellner of Vienna sensibly affirm, when employed tastefully and with due restraint, have a claim to recognition from an artistic standpoint. Gladly recognizing, as we perforce must, that effects of this nature are peculiarly liable to exaggeration and to unwarranted intrusion as the staple *pabulum* of organ voluntaries, it is to be feared that nothing is easier than to earn cheap notability or notoriety (as the case may be) by posing as a purist in matters artistic. A superficial acquaintance with the works of J. S. B.

(not omitting the church cantatas), an indulgent attitude towards Mendelssohn, a veneer of *haut goût* and an artistically repressed shudder at the bare mention of a Céleste, and lo! the guise is complete. "This *genus* is not uncommon" (as the text-books say)!! The upper notes of the Viole d'Orchestre do not individually resemble the Violin to the same extent as when used in chords, and in conjunction with the Céleste they convey the effect of "divided strings." Nor indeed is this a matter of surprise, considering how infinite the variety of expression or *timbre*, which alone checks the tone of the bowed string from becoming strident and wearisome to the ear. It is this facility of expression in the orchestra which raises an insurmountable barrier between it and the organ, and which, together with the palpable imperfections of many orchestral instruments (*e.g.*, Clarinet), lies at the basis of that autocephalous treatment of so-called orchestral organ stops, whereby an ultra-realistic and servile resemblance to their instrumental prototypes is of set purpose repudiated. (See also SWELL Box). A scale for the Viole d'Orchestre successfully employed in some of the Hope-Jones organs is: CC $1\frac{1}{8}$ in. (bare), T.C $1\frac{3}{16}$ in., Mid. C $1\frac{9}{16}$ in., $\frac{9}{16}$ mouth, cut up a bare $\frac{1}{8}$, and rollered.

VIOLE SOURDINE—Muted Viol. (Lat.) *Surdus* = subdued or quiet (hence also deaf). See also VIOL. 8 ft.

This stop, representative of muted strings, was introduced conjointly with the Viole d'Orchestre (*q.v.*), and Zauberflöte by Messrs. Michell & Thynne in 1885. It is a string-toned stop, made like the Viole d'Orchestre, of delicate and subdued tone. Examples voiced by the late Mr. Thynne exist at Tewkesbury Abbey; St. Katherine's Convent, Queen's Square, W. (Beale & Thynne), etc. The Hope-Jones type of Muted Viol is formed of pipes, usually of tin, tapering as they ascend. It had its origin in an attempt to suppress a slight "spit" often attendant on the speech of Viols of very small scale. The original specimens were voiced Mr. J. W. Whiteley. The Hope-Jones pattern of Muted Viol, when correctly treated, is one of the most beautiful tones conceivable. It is deliciously stringy, without evincing the least trace of roughness or horny quality. The Muted Viole may, indeed, be said to reproduce the "bloom" of the Salicional without the "body" of the stop. It is scarcely necessary to observe that the satisfactory treatment of so delicate a stop demands very considerable skill on the part of the voicer, and when made, careful handling during tuning operations. Crompton Fold, Bolton; Roehampton Parish Church (Hope-Jones); Burton

Muted
Viol

Parish Church (Norman & Beard, and Hope-Jones); Warwick Castle; Loughborough Parish Church (Ingram, Hope-Jones & Co.); Melbourne Town Hall (Ingram & Co.) *Scales*—Various scales have been used for this stop. CC, $1\frac{1}{4}$ in. at bottom, $\frac{5}{8}$ in. at top, $\frac{1}{8}$ mouth. CC, $1\frac{1}{2}$ in. has also been used. It is treated similarly to the *Viole d'Orchestre*.

Violette—4 ft. An octave Viol.

VIOLIN—Violine, Violino. 8 ft.; 4 ft. Equivalent to Viola.

Violin Diapason—8 ft. See **GEIGEN PRINCIPAL**.

Violoncello—(It.) Violoncello is diminutive of *Violone*, 8 ft.

As a manual stop the Violoncello is rarely met with. It is a full-toned Gamba, made of either metal or wood. It occurs more frequently on the Pedal organ; indeed, a few years ago the stop was customarily introduced as the first pedal 8 ft. stop. Nevertheless, it scarcely seems desirable to insert the Violoncello prior to the so-called Bass Flute. The Violoncello adds "grip" and "bite" to a Pedal organ, serving to fill up a possible *lacuna* or gap between the pedal and the manual tone. There is a good specimen, made of wood, at St. Mary's Parish Church, Nottingham (Bishop). This stop is usually bearded. A Violoncello by Mr. Lewis measured 4 in. at CC.

Violone—(Fr. and Ger.) Violon. For Acoustic Violone see **ACOUSTIC BASS**. (It.) Violone is augmentative of *Viola*. 16 ft.

The Violone is sometimes found as a manual double, variously voiced as a Double Diapason, Contra Gamba, or a hybrid stop midway between the two. The pedal Violone is a fairly small-scaled stop, constructed of wood or metal. In tone it generally partakes much more of Diapason quality than the so-called "Pedal Open Diapason, wood." Certainly in a moderate-sized organ it is preferable to the latter stop, its well-defined tone lending richness and firmness to the aggregate effect of the organ. At the same time the Violone is correctly described as a string-toned stop, good specimens displaying the "bite" which characterizes the orchestral Double Bass. The pipes, which are now generally bearded, depend for their effect very much on their *entourage*. It is well that they should be accorded ample room. *Scales*—St. Peter, Hindley (Schulze), CCC, $5\frac{3}{4}$ in. square; St. Alkmund, Derby (Lewis), CCC, 6 in. diameter (zinc).

VIOLONS CÉLESTES—8 ft.

The name has been applied by Messrs. Beale & Thynne and by Mr. J. W. Whiteley to the flat rank of a II rank (flat and sharp) *Viole Céleste*. There is no adequate reason why such ranks should not simply be described as flat or sharp. Such terminology is more prosaic perhaps, but less confusing.

Virginal—Virgin-Regal. See REGAL.

In some of the specifications given in Hopkins' and Rimbault's treatise, this name is translated as Virgin-Royal.

Vogar = Fugara. Walterhausen.

Vogelflöte—(Ger.) Vogel = bird. 4 ft.

A Flute of liquid "bird-like" tone. Quitteldorf. *cf.* Philomela.

Vogelgesang—Vogelgeschrei. (Ger.) Vogel = bird; Gesang = song; Geschrei = cry. See AVICINIUM.

Voix Céleste—Vox Angelica, Vox Cœlestis, (Sp.) Voz Celeste.

Under which is comprised Viole Céleste. (Fr.) Voix, (Lat.) Vox = voice (Fr.) Céleste, (Lat.) Cœlestis = heavenly. See also VOX ANGELICA. 8 ft.

A stop purposely tuned slightly flat or sharp to the pitch of the organ, so that, when drawn with another stop, a pleasant undulation of tone is induced. The first such stop introduced into this country was a Vox Angelica in the organ at the Panopticon, Leicester Square, W. (now the Alhambra), built by Messrs. Hill in 1853. Originally two Dulcianas, or a Dulciana and a Gamba, were so requisitioned, but of recent years it has become customary to employ two keen Gambas or Viols. If any distinction of terminology be observed at all now-a-days, Vox Angelica is employed to designate the more colourless and lighter effect of two Dulcianas, and Voix Céleste or Viole Céleste the animated and orchestral pulsation of keen Gambas. The effect of the Viole Céleste is so highly suggestive of the combined "strings" of the orchestra, that in naming the stop some builders have elected to press into service the plural number. The motive is sensible enough, were the idea systematically and consistently carried into effect, but there is every bit as much reason to speak of Voces Humanæ, or, in a lesser degree indeed, of Flutes, Oboes, etc. The Voix Céleste is almost invariably enclosed in a swell box. A Vox Angelica planted on the open Choir soundboard occurs, nevertheless, in the Dome Organ, Brighton (Willis).

The statement is commonly made that the better effect is obtained when the ranks of the Céleste are well differentiated in tone—that a Gamba beating against a Dulciana gives a more pleasing effect than one Dulciana beating against another. Nevertheless, this differentiation of tone militates against the purity of the effect, the distinction being expressed, in a nutshell, by the difference between "waving" and "wobbling." The effect of a Céleste depends greatly on the "tempering" or "grading" of the tuning through the compass. For instance, the beats in the bass should be very rapid. Frequently, in the attempt to minimize the proneness of the ranks to the tiresome phenomenon known as "sympathy," the interval separating

them has to be enlarged to an extent tending to mar the satisfactory effect of the undulation. A really satisfactory Céleste is a triumph of the empirical. There is no royal road to success, no arcane secret of treatment. A sharp Céleste is indubitably more effective than a flat Céleste, by reason of its greater animation, although it is apt to cause soft and dull-toned stops, like the Gedeckt, to sound rather flat by contrast. Most modern Célestes are tuned sharp, the tone quality of some demanding greater differentiation of pitch than that of others. The ordinary Céleste should be used in combination with other soft stops on the rarest occasions only. It can sometimes be drawn with a 4 ft. stop, or a Dulciana, or soft Gedeckt, but the effect, when the discordant rank is unduly overmatched, yet not sufficiently so to be overpowered, is positively excruciating. The aggregate effect and general utility of the stop has been conspicuously enhanced by the introduction of the two rank Céleste, the discord being divided by one rank beating sharp, and the other flat, to the unison pitch. The orchestral strings owe much of their vivacity to the fact that some are always a trifle sharp, others a trifle flat, to the central pitch. In this may be found *some* analogy for the organ Céleste. The first recorded theoretical basis for such a scheme occurs apparently in a paper on "Variations of Pitch in Beats," by Mr. Sedley Taylor, of Trinity College, Cambridge, published in *The Philosophical Magazine*, July, 1872.* The scheme was first carried into effect by Mr. Thos. Casson. The plan was also adopted by Mr. Hope-Jones, who has freely utilized Célestes so constructed in his organs, the flat rank, in some instances, being further under the control of the second touch (see DOUBLE TOUCH). A three rank Céleste (sharp, flat, unison) also formed one of the novel features introduced into the organ at St. Paul's Cathedral, as finally reconstructed by the late Mr. Henry Willis, in 1901.

Not only is the general effect of the Céleste so vastly improved by this balancing of the discord, but the stop can, in addition, more extensively and advantageously be set to combinational use. So superior, indeed, to the older system, is the flat and sharp Céleste that it may be justly asserted, without incurring the charge of undue dogmatism, that no large modern organ is complete without it. It will be obvious that the effects can be varied in character, according as the various ranks are combined. Thus either discordant rank may be used *alone* with the unison stop, or *together* with or without the latter. The most animated effect is secured by the conjunct employment of all three stops, provided that the pulsating Céleste ranks do not deviate widely from the central pitch. In addition to the keen Viole Céleste, a large instrument situated, let us suppose, in a building of favourable acoustical properties, might well comprise another variety of Céleste. By enclosure in different swell boxes the former type

* No. CCXC. pp. 56-64.

might gradually be merged like a sort of tonal "dissolving view" into a more peaceful Vox Angelica, and that even into an Unda Maris (*q.v.*) of the type made by Messrs. Norman & Beard. (See remarks under SWELL Box and VIOLE D'ORCHESTRE). The Voix Céleste is usually continued down to tenor C only. Its extension to Gamut G would certainly seem most desirable; indeed, in the case of the flat and sharp variety, the fine *vibrato* effects rendered possible by a closer approximation of the ranks to the central pitch as they descend, may be said to justify what additional expense would be involved in rendering their compass complete. An effective specimen so treated exists at St. Stephen, Wandsworth, S.W. (Whiteley). In this particular organ, also, the treble of the Viole d'Orchestre is so prominently developed and so influenced by the Swell *crescendo* that on opening the *loures* the effect of an additional Viol, speaking on a melodic attachment (*q.v.*) is at once suggested. A Viole Céleste extending to CC was also introduced by Mr. Compton at Bingham, Notts. (See also CELESTINA).

Voix Humaine—(Fr.) Vox Humana.

Voix Lumineuse—(Fr.) Lumineux = luminous.

An old French name for the Voix Céleste. Possibly it has reference to the "shining throng" of angels announcing the archetypal Christmas Day.

Vox Angelica—(Lat.) See VOIX CÉLESTE. Vox = voice, Angelus = a messenger, hence angel.

The name Vox Angelica is also sometimes applied to an Echo Dulciana, or Echo Gamba not discordant in pitch. In ancient times the Vox Angelica was a 4 ft. species of Vox Humana, invented by Ratz of Mülhausen. In Germany it is generally a small-scaled reed, with thin tongues, resembling in tone the Vox Humana. Formerly the name Vox Cœlestis was used interchangeably with Vox Angelica. Adlung treats of one serious problem arising in connection with the Vox Angelica with charming *naïveté*. Having diligently searched the Scriptures, he finds that nowhere therein is it recorded that a celestial messenger ever appeared to man in the guise of an unfledged boy or a woman. Accordingly, he concludes, it is altogether open to question whether one is justified in representing angels with treble voices at all.* Finally, like a flash of inspiration, the idea occurs to him that there is no such thing as an angel's voice as distinct from that of a human being. This quaint reasoning of Adlung's may perhaps be com-

* It is said that several clergymen in America objected to the representations of female angels, forming portion of the decorative scheme in connection with a new Anglican Cathedral in process of construction in that country, on the ground that female angels are nowhere referred to in the Bible. The architect, it seems, forthwith satisfied the objectors by offering to endow the good ladies with hirsute appendages. Here surely was an opening for Mr. George R. Sims!

mended to the notice of Sir Edward Elgar in connection with the *Dream of Gerontius*! As many of us nevertheless believe, there is a very real esoteric truth enshrined within the expression "the harmony of the spheres."

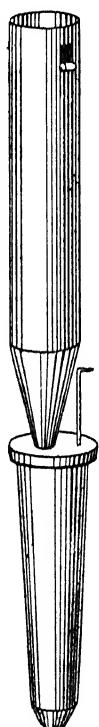
VOX CŒLESTIS—See **VOIX CÉLESTE**.

Vox Contralto = Contralto Voice. Former organ at Seville Cathedral.

Vox Flebilis—(It.) *Voce Flebile*. (Lat.) *Flebilis* = weeping. San Vittore, Varese (Bernasconi & Figlio, 1905); St. Alessandro, Milan.

Vox Humana—(Fr.) *Voix Humaine*; (Sp.) *Voz Humana*. (Lat.) *Vox* = voice, *Humanus* = human. 8 ft.; rarely 16 ft.; and 4 ft. See **VOX ANGELICA**, **VOX VIRGINIA**.

A reed stop, with metal pipes, supposed to be imitative of the human voice. The pipes are made with bodies measuring at CC variously from 10 in. to 2 ft. 3 in. in length. They are cylindrical in shape (see **REED** and **CLARINET**). The tone of the *Vox Humana* is thin and nasal; Mr. Robertson, indeed, remarks that it "may be anything, from Punch's squeak to the bleating of a nanny-goat." Dr. Burney in his "Tour in Germany and the Netherlands,"* speaking of the celebrated organ at Haarlem, makes the following amusing comments on the specimen in that organ, and on *Vox Humanas* in general:—"It does not at all resemble a human voice, though a very good stop of the kind; but the world is very apt to be imposed upon by names. The very instant a common hearer is told that an organist is playing upon a stop which resembles the human voice, he supposes it to be very fine, and never inquires into the propriety of the name or the exactness of the imitation. However, I must confess that, of all the stops I have yet heard which have been honoured by the appellation of *Vox Humana*, no one in the treble part has ever yet reminded me of anything human so much as of the cracked voice of an old woman of ninety, or in the lowest parts of Punch singing through a comb."



Vox
Humana.

The tongues of this Haarlem example are very wide at the end, and the upper pipes are shaped like those of the *Cor Anglais*, with an additional short cylindrical chimney on the top. The stop is too powerful, and to the author its effect was more like that of a 'Cello than a human voice.

As a matter of fact, granted a thin, smothered tone, the precise form of the pipe is practically immaterial. Indeed, the main *desideratum* is a sub-

* Vol. II, p. 303.

duced, smothered tone, conveying the effect of distance. Some years ago it was frequently the custom to ensure this by stuffing up the pipes of the Vox Humana with cotton wool. With the wider use of capped reeds the practice has been almost entirely discontinued. As in the case of the Physharmonika, the effect of the Vox Humana is almost entirely dependent upon the acoustical properties of the building in which it is situated. No amount of care expended in the voicing will render the Vox Humana, located in a non-resonant edifice, aught but a ludicrous caricature of the human voice.* Used with the Tremulant, in a very large or reverberant building, it may, by reason of its peculiar "nervous" fluttering effect, and by force of contrast with other stops, be caused to simulate a human singer, especially in the tenor portions of the compass, and still more in chords may it suggest the idea of a choir singing at a distance. There are very good specimens at the Albert Hall, London (Willis, 1871) and St. Anne's Cathedral (R.C.), Leeds (Norman & Beard, 1905). However much cynics may protest that the Vox Humana was never found to bear the faintest resemblance to the human voice, it is a well-authenticated fact that the uninitiated are constantly deceived into believing that they are listening to distant voices. In fact, the author distinctly remembers that when, as a boy, he heard the Albert Hall organ for the first time, he asked why "the man sang from the back of the organ." Many of the organs in large Continental cathedrals, in themselves of very indifferent voicing, nevertheless appear to be of magnificent tone by reason of the favourable acoustical conditions under which they speak. *Sound, indeed, is always enhanced by reflection.* Thanks to the building, and to the lavish statements of the guide-books, the Vox Humana at Fribourg Cathedral, Switzerland (Mooser, 1834), enjoys a reputation almost world-wide, whilst tourists flock in crowds under the auspices of the "Polytechnic" to derive their *pabulum* of edification from the organ recitals at Lucerne (Geissler, 1851), in which thunderstorms and Vox Humana effects figure very conspicuously.

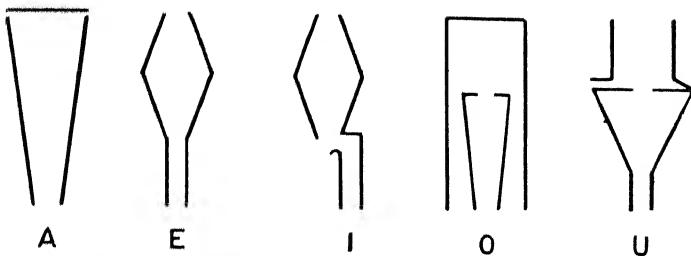
Sometimes with a view to heightening the effect of distance, the Vox Humana is detached from the rest of the organ, forming, perhaps, together with other stops, an Echo or Celestial organ. Norwich Cathedral (Norman & Beard); Westminster Abbey (Hill). It is sometimes even suspended somewhere up in the roof (e.g., Grace Church, New York, Roosevelt, 1878), a position at variance with one of the most elementary principles of organ architecture, which demands that the various portions of the instrument shall be situated in atmospheric surroundings of identical, or at any

* So much so that the Vox Humana and Tremulant effect has even been dubbed the "Nux Vomica with the gargle!" The peculiar "flavour" of the stop has also led to the mock-name of the "gas-pipe!"

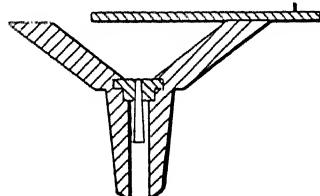
rate, consistent deviation of temperature. At St. Mark, Hamilton Terrace, London (Walker), the Vox Humana is placed up in the roof inside two concentrically located swell boxes, one swell box inside of a larger one. Stops with short-length pipes, such as the Vox Humana, Orchestral Oboe or Clarinet, are very liable to get out of tune (see REED and CLARINET). The Vox Humana sounds at its best when under the influence of a Tremulant (or Vibrato) of delicate and rapid pulsation. It is quite a fallacy to suppose that the Vox Humana so constantly finds a place in the organ merely on account of its possible likeness to the human voice. On the contrary, it forms a *timbre*-creating stop of no inconsiderable value. It is available as an effective accompanimental background to stops of various kinds, and combines well with Flute stops. Needless to add that, in view of this, the practice of permanently connecting a Tremulant to the Vox Humana is not a desirable one to be adopted as a precedent. Should an organ be of sufficient dimensions to include a Solo department equipped with enclosed Flutes, the Vox Humana will probably be found more serviceable on this manual than in its more customary position in the Swell organ. See also remarks under TREMULANT and VIOLE D'ORCHESTRE. The author may claim the extremely rare experience of having heard (at the factory of Mr. Gern) a Double Vox Humana pipe. Its tone was extremely fine, resembling a Vox Humana mingled with a sort of soft Bourdon accompaniment.

Suggestions have from time to time been put forward that in the construction of the Vox Humana stop some attempt might be made to imitate the structure of the vocal chords. The outcome of such an attempt would certainly be of such delicacy as to proscribe its use in the organ. M. Kratzenstein, whose name is associated with that of the Abt Vogler in the introduction of free reeds into the organ, won a prize offered by the St. Petersburg Imperial Academy of Sciences, in 1779, for an enquiry into the nature of the vowel sounds, and the construction of an instrument for artificially imitating them. He found that it was possible to distinctly reproduce the vowel sounds by means of reeds surmounted, severally, by pipes of the form here illustrated.* In the case of the vowel I, however, the reed was dispensed with, the wind being simply led into the pipe.

* In case any reader should desire to experiment in this direction himself, it may be added that the success of the effect depends largely on the treatment of the tongue. A Cor Anglais pipe sometimes gives in the upper notes a distinct E sound. With a little ingenuity, it would, no doubt, be possible to obtain quite a tolerable vocal representation of the various inmates of Noah's Ark. The organ already boasts a Bärpfife, a Kälber-Regal, a Bockschwebung, a Cuckoo, a Nightingale, and a Vox Humana. A skilful modification of the U sound would perhaps result in the accession of the Vox Felina (*i.e.*, Cat's voice) to the ranks.



M. Kempelen, of Vienna, also succeeded in constructing an apparatus furnished with a mouth-piece, and a nose, made of two tin tubes which communicated with the mouth. When both tubes were open and the mouth piece closed, the consonant M was sounded, and when one was closed the consonant N. Eventually M. Kempelen was able to produce entire words and sentences, such as *Je vous aime de tout mon cœur*, *Constantinopolis*, *Romanorum imperator semper Augustus*, *Exploitation*, etc. French pronunciation would, of course, lend itself more readily to artificial imitation. For a fuller description of this machine, the reader should consult Sir David Brewster's "Letters to Sir Walter Scott on Natural Magic." Mr. Willis, of Cambridge, pursuing a former experiment of M. Kempelen, obtained some very curious and interesting results. He employed a reed and funnel shaped cavity like that shown in the figure. By sliding a flat cover over the top he found he could produce the whole series of vowel sounds. In another experiment Mr. Willis fitted to the reed cylindrical bodies with sliding telescope joints. Brewster summarizes the results as follows: "When the tube was greatly less than the length of a stopped pipe in unison with the reed, it sounded I, and by increasing the length of the tube it gave E, A, O, and U, in succession. But what was very unexpected, when the tube was so much lengthened as to be $1\frac{1}{2}$ times the length of a stopped pipe in unison with the reed, the vowels began to be again sounded in an inverted order, U, O, A, E, and then again in a direct order, I, E, A, O, U, when the length of the tube was equal to twice that of a stopped pipe in unison, with the reed."



{ **Vox Inaudita**—

{ **Vox Ineffabilis**—(Lat.) Inauditus = unheard. (Lat.) Ineffabilis = unutterable, inexpressible.

A facetious pleasantry indulged in by some mediæval organ builders. The stops so named extended no further than dummy stop handles! Sycophantic organ builders take note!

Vox Mystica—8 ft.

A stop bearing this name occurs in the Echo organ in the Colston Hall, Bristol, organ (Norman & Beard, 1905). The tone, which was intended to represent Madam Clara Butt's voice, is that of a rather full-toned Echo Vox Humana. The pipes resemble Cor Anglais pipes, with a slot in the under side of the bell, save that they are cylindrical, not of inverted-conical shape.

Vox Pueri—**Vox Tauri**. (Lat.) Puer = boy; Taurus = bull.

At Carigrana Church, Genoa, these two names constituted the "Soprano" and "Basso" of one stop. The humorous side of the arrangement occurs, not so much in the stop itself, which in all probability was merely a variety of Vox Humana, as in the naive idea of grouping together boys' and bulls' voices as cognate. It is scarcely complimentary to Italian choirmasters.

Vox Retusa—(Lat.) Retusus = dull. A soft-toned Gedekkt.

In the middle ages the adjective *retusus* was sometimes used to designate stopped pipes. Lund Cathedral, Sweden.

Vox Stellarum—See **CYMBALSTERN**.**Vox Tauri**—See **Vox Pueri**.**Vox Vinolata**—(Lat.) Vinolentus = drunken. (Vinolata is very bad Latin).

A small-scaled Gemshorn of weak intonation. Lund Cathedral, Sweden. How the stop came to receive so extraordinary a name is not known. It is not a Vox Humana. Commenting on the Vox Vinolata, the Editors of *The Organist and Choirmaster* propounded the delightful suggestion that it might well be utilized as a stock object lesson in "Temperance Hall" organs.

Vox Virginia—(Lat.) Virgo = a virgin. 4 ft.

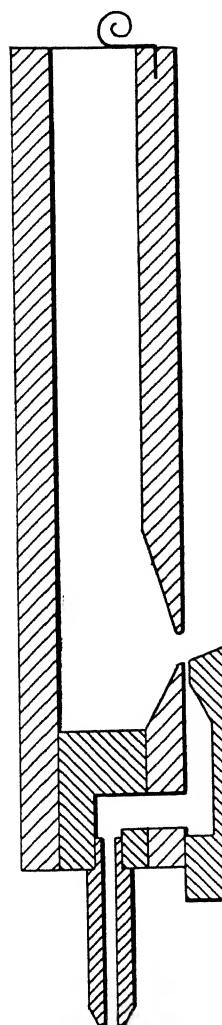
An octave Vox Humana. See also **VOX ANGELICA**.

W.**Waldflöte** — **Feldflöte**. (Lat.) Tibia Silvestris; (Fr.) Flûte Champ. *Anglicè* Wald Flute. (Ger.) Wald = wood, Feld = field; (Fr.) Champ = field; (Lat.) Silvester = of a wood or forest. 8 ft.; 4 ft.; abroad occasionally 2 ft.

A wood Flute of rectangular form and large scale. It was introduced in this country by Mr. W. Hill in 1841. In 8 ft. pitch the Waldflöte is a speciality of Messrs. Walker, to be found in nearly all of their instruments built within the last twenty-five or thirty years. It was formerly continued

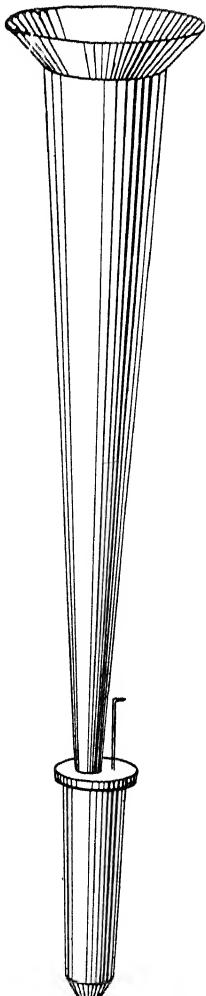
by a stopped bass from mid. C, but as now made, practically only the lowest nine pipes are stopped. The Waldflöte is constructed with an inverted mouth on the narrow side of the pipe. The tone of the Waldflöte is fairly powerful, and is distinguished by a very sweet and cloying horny *timbre*. In its fullness of tone it resembles the Clarabella, in the slightly hard quality the English Hohlföute. The horny quality is probably due to the development of certain of the higher harmonics, notably the flat twenty-first. The stop is of exquisite quality, and is most useful, alike *solo* and in combination. In the tenor octave, particularly when combined with the Swell Oboe or Viol (box closed), chords on the Waldflöte furnish an excellent representation of orchestral Horns. The Waldflöte is also largely used by Messrs. Norman & Beard. It is open to discussion whether the Waldflöte 8 ft. is the most suitable stop for use as the Great organ Flute, especially in churches of but modest dimensions. It is an indisputable fact that the peculiar *timbre* of stops with inverted mouth is apt rapidly to pall and become wearisome to the ear. The sweet "sugary" character of the Waldflöte, whilst doubly enhancing the value of the stop for occasional combinational use and for solo purposes, would seem to render it rather inappropriate for the position of a stop so constantly in use as a Great organ unison Flute. On any other manual, or in octave pitch, this objection would not hold valid, but for the said position a stop of the Tibia class would certainly appear to be more suitably adapted, and might therefore profitably be substituted.

The Waldflöte is frequently employed by English builders as a 4 ft. Choir stop. Some firms also use it in place of the more usual Harmonic Flute 4 ft. on the Great organ, holding its blending power to be superior. This is purely a matter of taste, and, apart from this question, there is little to choose between the two stops. As used by Mr. Compton, the Waldflöte has a sloping block and cap of peculiar shape. His pipes are also more sparsely nicked than is ordinarily the case, and the upper lip presents the unusual feature of being rounded and polished. On the Continent the Waldflöte lacks the horny character of tone;



Section of Waldflöte
(Compton).

it frequently possesses rather a "fluffy," woolly quality, by no means prepossessing. On the very rare occasions on which it is there employed in a 2 ft. pitch, it is of large scale and sharp tone.



WALDHORN—Feldhorn, Corno di Caccia, Cornetto di Caccia, Cor de Chasse, Corne Parforce, Corne Sylvestre. (Ger.) Wald = wood, Feld = field; Parforcejagd = hunting; (Fr.) Chasse = chase, Sylvestre = pertaining to a wood, rustic; (It.) Corno di Caccia = Hunting Horn.

These names have reference to the ancient hunting horn. The Corno di Caccia, as an organ stop, is sometimes equivalent to Clarinet. When of 2 ft. pitch the Waldhorn was identical with the Waldflöte, and usually so when of a 4 ft. pitch. In unison pitch the Waldhorn was a reed, imitative of the hunting horn. In the museum at Kelso are preserved two specimens of the hunting horn. One of them measures in diameter $16\frac{1}{2}$ ins. external, $14\frac{3}{4}$ ins. internal, measurement, and $9\frac{1}{2}$ ins. across the bell. A correspondent in "Notes and Queries" (Sep. 8th, 1888) supplies the information that such horns were always worn by the huntsmen at St. Germain-en-Laye as late as 1857-58, Königsberg Cathedral (1720); Lund Cathedral, Sweden (tongues of German silver). The name, Waldhorn, is also applied by Mr. John H. Compton, of Nottingham, to a stop of his invention. It is a very powerful free-toned Double reed, resembling in quality the Double English Horn, though more powerful than that stop. It is only suited to large instruments. See also the same builder's FRENCH HORN.

Weidenflöte—Weidenpfeife. See SALICIONAL.

Weigle's Patent Pipes—See STENTORPHON, and SERAPHON REGISTER.

Weitpfeife—(Ger.) Weit = wide, broad. 8 ft.; 4 ft.; 2 ft.

Waldhorn (Compton). A large-scaled Flute, synonymous with Blockflöte.

WIENERFLÖTE—See VIENNA FLUTE.

Wohlklang—(Ger.) Wohl = well; Klang = sound.

A name sometimes given to the Harmonika.

Z.

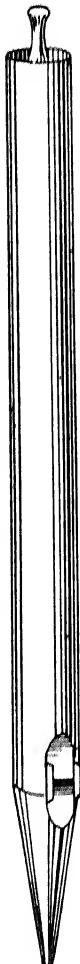
ZARTFLÖTE—*Anglice* Zartflute. (Ger.) Zart = tender, delicate. 8 ft.; 4 ft.

According to Seidel the Zartflöte was the invention of T. Turley, and was first introduced by him into the organ at St. Mary, Wismar. It was an 8 ft. wood pipe of narrow scale, in tone a hybrid between a Flute and a Fugara. As now made in this country and in Germany the Zartflöte is a small-scaled Flute of bright tone. It is constructed of either wood or metal. In England it is generally found on the Swell or Choir organ and of 4 ft. pitch (*e.g.*, in organs by Messrs. Brindley & Foster). Sometimes the Zartflöte, as used by Messrs. Beale & Thynne and Mr. J. W. Whiteley, was a Phoneuma.

Zauberflöte — Harmonic Gedeckt. (Ger.) Zauber = magic.

Named after Mozart's celebrated opera "Die Zauberflöte." The Zauberflöte was invented by Messrs. Michell and Thynne, and first introduced into their organ for the Inventions Exhibition of 1885, erected in Tewskbury Abbey in 1887. It is composed of stopped pipes, of harmonic structure in the treble. These harmonic pipes overblow to their first upper partial (the twelfth). The actual length of such pipes, therefore, is three times that of an ordinary stopped pipe. The tone of the Zauberflöte is full, liquid and pure. It sometimes has a suspicion of stringiness attached to it; but this was a feature, and in some respects a failing, of much of the late Mr. Thynne's work. The Zauberflöte functions admirably as a Twelfth (See HARMONIC STOPPED TWELFTH). The harmonic stopped principle of structure is, however, no new invention. It is not unknown in the case of certain Flutes in old German organs, and in

1754, Snetzler introduced such a stop, named German Flute, into his organ at King's Lynn. Messrs. Norman & Beard, who for some time had this instrument under their care, reproduced the variety of stop, under the name of Harmonic Gedackt 4 ft., at St. Catherine's College, Cambridge (CC note



Zauberflöte.
(Thynne.)



Snetzler's
German
Flute.

$2\frac{1}{4}$ in. diameter). Snetzler's original stop is of 8 ft. tone. From mid. C upwards the pipes are of his favourite Chimney Flute form, though, of course, of harmonic construction. The mouths are arched and provided with long ears for tuning purposes. At mid. C the scale is $1\frac{3}{4}$ in. diameter. Below this the stop is composed of ordinary Stopped Diapason pipes. There are examples of the Zauberflöte at Tewksbury Abbey (Michell & Thynne); Mr. J. Martin White's Chamber organ at Balruddery, nr. Dundee (Casson-Thynne, rebuilt by Hope-Jones); St. Katherine's Convent, Queen's Square, W. (Beale & Thynne); Norwich Cathedral (Norman & Beard); St. John, Birkenhead (Hope-Jones); Holy Trinity, Scarborough (Denman).

Ziflot—See **SIFFLÖTE**.

Zink—Cink, Zinke, Zincke, Zinken, Zünk, Orlo, Litice, Lituus, Cornetto (*q.v.*), Cornetto Muto, Cornetto Torto, Cornettino.

The Zink was an ancient instrument of the Serpent order, but of higher pitch. It was constructed of either wood or deers' horn. Cornetto-Muto and -Torto were varieties thereof. (Lat.) Mutire = to speak softly or mutter; Torquere = to bend over or twist; Lituus = "a kind of crooked Trumpet uttering a shrill sound, a clarion" (Adams). The name of this stop has no connection with the metal zinc. The latter does not appear to have been employed as a material for organ pipes until, in 1820, Marx, of Berlin, built an organ at Hohenofen with zinc pipes and a cast-iron case! Let us hope and trust he will never be held even indirectly responsible for some of the developments of his experimental conception. 8 ft.; 4 ft.; 2 ft. The organ stop was a snarling Clarion, found usually on the Pedal organ. The pipes were of inverted conical shape and of small scale. Their tongues were broad and thin. In some organs the Zink was a Pedal Sesquialtera or Cornet. A 2 ft. specimen reed exists at St. Bavon, Haarlem.

Zwergpfeife—(Ger.) Zwerg = dwarf. Dwarf-Pipe. See **PICCOLO**.

ADDENDUM.

Sirenum Chorus—(Lat.) = Sirens Chorus.

In the organ by the firm of Pietro Bernasconi & Figlio, just (Nov. 1905) opened at Varese, in Italy, occurs a stop of this name. It is probably a Vox Humana or Flute and Tremulant effect. Let us hope it is not a *Syrens* chorus of the type referred to by the reporter of the provincial newspaper, who accredited Sir Hubert Parry with a descriptive work entitled "Blest Pair of Syrens." In the same instrument appears a stop bearing the title Eufonio "Pietro Bernasconi," 8 ft. Concerning the special features of Signor Bernasconi's Euphone, no information is vouchsafed.

PHONETIC PRONOUNCING VOCABULARY OF ORGAN STOPS.

ONLY such names as are likely to confront the student of the simple stop-terminology of English organ-building are included in this list. Obviously it has been compiled mainly to meet the needs of those who are unable to acquire their pronunciation by the customary mode of oral tradition. The few, so situated, who may desire to roam further afield will best supplement the information given in this handbook by seeking initiation into the rudimentary phonetic principles of the German and French tongues. Composite names are here divided. To discover the pronunciation of such a stop-name as *Voix Céleste*, for instance, it will be necessary to refer to both V and C. It is to be understood that the pronunciation ordinarily refers to English, not Continental, usage. In some cases both versions are given (*e.g.*, *Piccolo*), but it is perhaps well to point out that no undue purism in pronunciation is implied by this fact. The whole system of stop-terminology is so hopeless a conglomeration as to render pedantic and entirely *mal à propos* any such exactitude.

KEY TO THE PHONETIC SCHEME.

The vocal *ictus* is indicated by the accent (') placed over the syllable or syllables demanding such emphasis.

Short vowel: á, as in *at*; ȳ, as in *pin*.

Long vowel: ā, as in *May*; ī, as in *pine*.

Other signs: ah, as in *father*; oo, as in *moon*; ch, as in *loch* (Scotch).

A line under two syllables indicates that they are to be treated as a synalepha, *i.e.*, to be taken conjointly to express, as nearly as possible, one vowel sound. Thus ah-oo is intended to signify a sound rather broader than that represented by the diagraph *ow* (as in *owl*). The method is certainly clumsy, but it is impossible otherwise to express sounds which have no common equivalent in the English language.

A.

ACOUSTIC—Ah-ków-stik.

ÆOLINE—E-oh-léen. Continental pronunciation, A-oh-léen-er (*r* not sounded).

ANGELICA—An-jéł-í-kah.

ANGLAIS—Ahn-glá.

B.

BASSOON—Bás-sóon.

BOMBARDE—As in the verb, to bombard.

BOURDON—Bóor-don (*n*, aspirate). Usually Bóor (as in *poor*) -don (*n* sounded).

C.

CÉLESTE—Sá-lést.

CLARABELLA—Clár-ah-béll-ah.

CLARIBEL—Clár-é-béll.

CLARINET—Clár-í-nélt.

CLARION—Clár-í-on.

CLAUSA—Clór (*r* not sounded) -sah, or (*more Romano*) Clah'-oo-sah.

CONTRA—Kón-trah.

CORNOPERAN—Kór-nó-pe-an. But frequently pronounced Kor-nó-pán (final syllable as in *champion*).

D.

DIAPASON—Dí-ah-pá-zon.

DIAPHONE—Dí-ah-fóne.

DOLCE—Dóll-ché.

DOPPEL—Dóp-pél.

DULCET—Dúll-set.

DULCIANA—Dúll-sé-áh-nah.

DURA—Dú-rah.

E.

EUPHONE—U-fóne.

F.

FAGOTTO—Fah-gó-tó.

FLAGEOLET—Fláj-ó-lélt, or Fláj-é-ó-lélt.

FLAUTINO—Flah'-oo-té-no. Commonly Flaw-te-no.

FLAUTO—Flah'-oo-to.

FLÖTE—Flá'-er-ter (neither *r* sounded).Slightly more of the *á* sound than is expressed by *ir* (as in *flirt*).

G.

(G pronounced hard throughout).

GAMBA—Gám-bah.

GFDACKT—Gá-dáhkt.

GEIGEN—Gí-gen.

GEMSHORN—Géms-horn.

GROSS—Grós.

H.

HAUTBOIS—Hó-bo-ah.

HAUTBOY—Hó-boy.

HOHFLÖTE—Hóle; see FLÖTE.

HUMANA—Hú-máh-nah.

J.

JEU—Gér (*g* soft, and final *r* not sounded).

K.

KERAULOPHON—Kér-áw-ló-fón.

L.

LIEBLICH—Lé-blích.

M.

MARIS—Máre (as in *care*) -Ís, or (*more Romano*) Máh-řes.

MUTED—Mú-těd.

O.

OBÖE—Ó-bö-ay. Commonly Ó-boy.
OPHICLEIDE—Óf-Y-klide.

P.

PHONEUMA—Fö-nü-mah.
PHONON—Fö-non.

PICCOLO—Pé-kö-loh. Commonly,
Pík-ö-loh.

POSAUNE—Pö-zówn-ner (*r* not sound-
ed). Commonly, Pö-zówn.

Q.

QUINTADENA—Quín-tah-dé-nah.

QUINTATÖN—Quín-tah-tön (as in
FLÖTE, *q.v.*).

R.

RESULTANT—Re-zül-tant.

ROHRFLÖTE—Röhr. Commonly Rör
(as in *roar*). See FLÖTE.

S.

SALICIONAL—Sál-i-sh-í-ö-näl. Some-
times Sálsh-Y-ö-nal.

SESQUIALTERA—Sés-quë-ál-tér-ah (or
trah).

SONORA—Söñ-ör-ah.

STENTORPHON—Stén-tor-phön.

SUABE—Swahb.

T.

TIBIA—Tíb-Yah.
TIERCE—As in *fierce*.
TRAVERSO—Trah-váir-so.
TREMULANT—Trém-ü-länt.
TROMBA—Tróm-bah.
TROMBONE—Tróm-bóne.
TUBA—Tú-bah.

U.

UNDA—Ún-dah, or (*more Romano*)
Óón-dah.

V.

VIBRATO—Ví-bráh-töh.
VIOL—Ví-öl.
VIOLA—Ví-ö-lah. Frequently pro-
nounced Vé-öl-ah.
VOIX—Vö-ah.
VOX—Vöx, or (*more Romano*) Vöx.

W.

WALDFLÖTE—Vahld; see FLÖTE. But
in England the *w* is generally
incorrectly rendered *more Angli-
ciano*: Wahld.

Z.

ZARTFLÖTE—Tsart; see FLÖTE.
ZAUBERFLÖTE—Tsow (as in *how*)
behr; see FLÖTE.

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